1980

The Effect of Sex, Need for Achievement, Women's Role Orientation and Normative Information upon Causal Attribution of Success

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THE EFFECT OF SEX, NEED FOR ACHIEVEMENT, WOMEN'S ROLE ORIENTATION AND NORMATIVE INFORMATION UPON CAUSAL ATTRIBUTION OF SUCCESS

By

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A Dissertation Submitted to the Faculty of the Graduate School of Loyola University of Chicago in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

May

1980

ACKNOWLEDGMENTS

I wish to express my sincere gratitude to Dr. John D. Edwards, the Director of my Dissertation Committee, for his continuous guidance and professional advice in the preparation of this research investigation. I am also grateful to Dr. James E. Johnson, Dr. Jill N. Nagy, and Dr. Emil J. Poavac for their constructive criticism and helpful suggestions.

I would like to thank my husband, W. Allen Davies, for his editorial help and patient encouragement, without which this dissertation would never have been completed. Invaluable assistance in analysis was given by George Hartwein.

VITA

The author, Eliza Taggart Davies, is the daughter of the late Rush Taggart and the late Carolyn (Dorsett) Taggart. She was born November 29, 1932, in New York, New York.

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INTRODUCTION

Today, as women enter the job market in steadily increasing numbers, many of them expect to participate equally with men in opportunities for employment. If women are to have equality with men in jobs, salaries, and promotions, women must be able to show they equal men in their commitment to successful achievement.

In the past, women have generally not held as high-status and well-paid jobs as men. The statistics on earnings of men and women provide documentation of this view. According to a study done by the Women's Bureau of the U.S. Department of Labor, male full-time employees earned on the average $14,626 in 1977. Females employed full-time earned on the average $8,618 in 1977. Women earned 59 cents for every dollar earned by men (Men's, 1979).

While these figures may reflect women's more recent entry into the job market, a study done by the Scientific Manpower Commission of Labor Department employment statistics for 1976 found that in every category of employment,

women's salaries were lower than those of men with comparable training and experience. This difference was true at every age and every college degree level (Education, 1978). Epstein (1974) reports that where women have devoted their lives to a career, they are found at the lower edge of successful, high-status jobs.

A number of reasons can be cited to explain why women earn less. Women's biological systems have placed restrictions on their ability to commit themselves totally to job and career. The time and energy women devote to child bearing and day-to-day care of their families have frequently precluded outside work and careers. Men, on the other hand, have been able to dedicate themselves more fully to their jobs and careers.

The greater responsibility for day-to-day family care may limit women in a number of ways. They may be forced to accept a less challenging job in order to work hours which allow time for family. Often they cannot work overtime because of child-care responsibilities. Furthermore, the tendency of women as a group not to seek as much higher education or technical training as men may be dictated by their realization that they cannot be fully committed to a career and have a family as well.

Technological changes in the past few years have made it easier for women to pursue a successful career. Family

size and timing, thanks to new methods of birth control, can be planned around job and career requirements with a high degree of reliability. Labor saving devices and convenience products have made the care of children easier.

Political and social changes also have helped women. Legislation has been passed requiring equal consideration for promotion and hiring. Women have been encouraged by the women's movement to accept new types of jobs and to seek promotions wherever possible. The chance for women to have successful careers and equal participation in the job market with men is greater now than it has ever been.

There is some evidence women will not automatically accept opportunity when it becomes available. In one case, when a group of twenty female secretaries was offered training leading to management positions, only one secretary accepted the offer (Head, Note 2). It has also been observed that women shy away from engineering training (Florman, 1978). No doubt many women are taking advantage of the new possibilities for jobs and careers. But many women are not, even though external barriers to equality with men have in great part been removed.

Full participation by women in jobs and careers necessitates their full commitment to performing to their capacity. Women must not only show that they wish to be as successful as men, but they must also be able to make the

maximum use of each opportunity as it comes along. Otherwise they will lose their new equality with men in possibilities for careers, jobs, and promotions.

This dissertation will deal with one psychological construct which might prevent women from seeking success and from being successful. The psychological construct to be examined is the need for achievement (nAch).

The theory of nAch focuses upon beliefs people have about achievement. The presence of certain beliefs in sufficient strength leads people to behave in ways that raised the likelihood of success. The absence of these beliefs in sufficient strength leads people to behave in ways that reduce the likelihood of success.

The theory of nAch should be of help in understanding women's psychological ability to seek and to achieve success. Evidence from past experiments will be presented in this dessertation to indicate that some women have a motivation to achieve in the same way as do men. They believe achievement in any area of endeavor is appropriate for women.

Other women accept the traditional role assigned to them by society. They tend not to compete with others or to seek success for themselves (Hoffman, 1972; Mead, 1949; Stein & Bailey, 1973). There is the possibility that when this latter group of women is successful, they explain

their achievement as due to luck more than do men. Acceptance of personal responsibility has been identified by the theory of nAch to be related to behavior which leads to success. Therefore, these women do not believe themselves personally responsible for achievement, and this belief may hurt their chances to succeed.

THE THEORY OF NEED FOR ACHIEVEMENT

McClelland's Basic Work on nAch

Certain beliefs or fantasies were seen by McClelland (McClelland, Atkinson, Clark & Lowell, 1953) as leading people to be successful. Those who had more of these beliefs were high in need for achievement (nAch) while those who had fewer of these beliefs were low in nAch.

Characteristics of high nAch. Those who are high in nAch are concerned about "competition with a standard of excellence" (McClelland et al., 1953). This type of person always wants to do better than last time.

Those who are high in nAch believe success is brought about through the expenditure of effort, while failure is seen as the result of too little effort. Effort is seen by these people as the way they can control outcomes. On the other hand, people low in nAch do not have the same belief in the effectiveness of their own efforts to achieve success. They also do not see failure as due to lack of effort on their part as much as do people high in nAch.

The belief of people high in nAch in their personal effectiveness has several results. First, people high in nAch tend to choose situations in which they can observe the effectiveness of their efforts in achieving success. Second, they find the effective use of effort to achieve suc-

cess as satisfying as any material rewards which might accrue to them from success. The result is that people high in nAch often will not rest once success is achieved but will seek new challenges through which their effectiveness can be retested. Finally, because the people high in nAch are always looking for situations in which to achieve, they tend to be restless. Not content with doing well, they want to do better. They are always seeking new and more effective ways to do the job.

Use of the TAT method. McClelland needed a method to test for differences in nAch. He chose the Thematic Apperception Test (TAT) as a means of measuring nAch. In the TAT, people are asked to tell brief, five-minute stories in response to a number of pictures. These stories represent what people think about in response to the situations depicted in the pictures. Because people's thoughts are represented in imaginative stories, McClelland referred to them as "fantasies" (McClelland, et al., 1953). He points out that as they are fantasies, they may tap more accurately a person's nAch than actual performance. Actual performance is not only shaped by a person's nAch but also by restrictions of time, talent and opportunity.

The number of fantasies concerned with a need are reflected in the TAT protocols in direct relation to the level of that need. McClelland demonstrated this with hunger, a

need easily manipulated through the withholding of food. Those people who had gone the longest time without food told the greatest number of stories about hunger, eating and food.

The TAT appeared also to measure reliably the stimulation of the nAch. The nAch was believed to be engaged when there was an opportunity to enter into competition with a pre-established standard of excellence, i.e., a challenging condition. When men were told the test they were taking (i.e., the TAT) was a valid test of their intelligence and their leadership ability, they told more stories concerned with achievement than did those men who were in the relaxed condition. In the relaxed condition, participants were told that the test was in the formative stage and that no standards of performance had been developed. McClelland (1961) found that scorers can be trained to score TAT protocols reliably for nAch imagery. Interscorer reliability is very high (Atkinson, 1960; McClelland et al., 1953; Sadacca, Ricciuti, & Swanson, 1956).

Test-retest reliability is low by usual psychometric standards (Birney, 1959; Haber & Alpert, 1958; Krumboltz & Faruahar, 1957; Moss & Kagan, 1961). McClelland (1961) thought the TAT task was sufficiently interesting that people tended to think over their answers after the test, to invent new ideas for stories and to remember these new ideas

when asked to retake the test, thus accounting for low test-retest reliability.

Validity of nAch. In The Achieving Society (1961), McClelland reports having used the scoring method developed to measure nAch level in TAT protocols as a way to gauge the level of nAch in literature. He was able to show an apparent parallel between the level of nAch expressed in a country's literature and the economic success of the country. He cites many intriguing examples. For instance, the rise and fall of the shipping industry in Spain in the 15th Century was preceeded by a rise and fall of nAch imagery in Spanish literature. An increase in nAch content in English literature between 1550 and 1800 was followed fifty years later by an increase in coal imports into London Harbor.

The success of a business also appears to be related to the level of nAch of its executives. Two companies in Mexico City, both engaged in the same type of business, had on file protocols from an administration of the TAT to all company executives. Five years later these protocols were reanalyzed for their nAch themas. The company whose executives showed the greatest nAch was the company which had grown more in those five years (McClelland, 1961).

The examples cited so far have been correlational and have used archival data. There is also laboratory evidence that nAch is related to better performance at tasks. High

nAch people exhibit behavior more likely to lead to success than low nAch people. High nAch people tend to be more persistent at a task in the face of failure than low nAch people. When solving a task was necessary before a second task could be undertaken, people high in nAch solved more of the first task than did people low in nAch. If working on the second task was not represented as contingent on doing well in the first task, high nAch people did not do better at the first task than did low nAch people.

Evaluation of evidence for McClelland's theory. Klinger (1966) reviewed the considerable body of experiments concerned with whether or not nAch affects performance. He concluded that, although there is evidence of a relationship between level of nAch and performance, many experiments do not find such a relationship. Klinger pointed out the wide variety of tasks done and the variables considered in the experiments. He concluded that, although nAch may be an important variable in determining success, many other variables are also important. His review of nAch research points up several problems with McClelland's theory of nAch.

First, the scoring system for nAch considers only the number of times striving towards a goal is mentioned. Other variables, such as strength of that striving, the ways in which success is achieved, and the number of times

actual success is achieved, are not considered.

A second problem is with the influence of the environment on scores. The ability of the nAch scores to reflect an enduring motivational characteristic depends upon their independence from extraneous influences. Klinger (1966) discussed studies showing that the experimenter can influence (often unconsciously) the level of nAch scores. People also appear to test differently in different activities depicted in the pictures (Veroff, Feld, & Crockett, 1966).

Finally, McClelland assumed that arousal of nAch leads to more effective behavior than does non-arousal. The higher the level of nAch arousal, the more successful a person will be. But experimental evidence fails to support this relationship. When an experimental situation was designed to arouse nAch to a high level, there was no relatinship between the level of nAch arousal and successful performance (Birney, 1958; Smith, 1961).

It was apparent that the theory of nAch needed some refinement. While nAch may be related to success, other variables often appear to modify either the level of nAch or its effect on intensity and direction of behavior. Atkinson, a colleague of McClelland's, in the original research on nAch, became interested in those variables, thought to affect the intensity and direction of behavior.

Atkinson's Expectancy-Value Theory of nAch

Atkinson (Atkinson & Raynor, 1974) became interested in goal-setting behavior of individuals. He focused upon previous experimental evidence that people high in nAch show a greater preference for intermediate-risk goals than shown by people low in nAch. He developed a mathematical relationship to explain the tendency to pick challenging goals.

In developing his model, Atkinson placed the theory of nAch into an Expectancy-Value framework developed by Tolman (1955), Lewin, Dembo, Festinger, and Sears (1944), and Edwards (1954). In Expectancy-Value theory, the attractiveness of a particular goal for an individual is based on the intrinsic value of the goal and the probability of obtaining the goal. The value of the goal is inversely related to the probability of obtaining the goal. Specifically, the value is equal to one minus the probability. In general terms, the more the goal is worth, the more people will want it, with the result that the probability of obtaining it is reduced. Conversely, something which is easily obtained is valued less than something which is difficult to obtain.

A person deciding on the attractiveness of a particular goal subconsciously considers both the intrinsic value (1 - P) and the probability (P) of obtaining the goal. These two elements are multiplied together, according to Ex-

pectancy-Value theory, with the result that the most attractive goal is the one for which the odds of success are one-half.

According to Atkinson (Atkinson & Feather, 1966) every individual has the innate "motive to succeed." The individual's evaluation of a goal's attractiveness interacts with this motive to succeed. The result of this interaction determines the individual's course of action toward the goal. Atkinson operationalized the motive to succeed by using McClelland's nAch construct. In Atkinson's work, participants were administered the TAT and scored for number of nAch themas. The number so determined was designated as the motive to succeed.

Atkinson defined the "tendency to succeed" as the product of the motive to succeed multiplied by the attractiveness of the goal:

$$T_S = M_S\ (P)\ (1 - P)$$

where: T_S = tendency to succeed, M_S = motive to succeed, (P)(1-P) = attractiveness of obtaining the goal, (P) = the probability of obtaining the goal, and (1-P) = the intrinsic value of the goal.

Further, Atkinson pointed out that people often refrain from doing something because they are afraid of the consequences of failure. The "tendency to fail" (t_f) was defined by Atkinson using a formula similar to the one for

tendency to succeed. The M_s factor was replaced by M_f, the "motive to fail." The numerical value of M_f was determined by the score obtained from a test of anxiety, just as M_s was determined by the score on a test of nAch. The value of the goal (P)(1 - P) is mathematically identical.

In Atkinson's theory, the course of action selected by a person will depend on the tendency to succeed (T_s) less the tendency to fail (T_f).

Evaluation of Atkinson's Expectancy-Value Theory of nAch. There are a number of advantages to Atkinson's theory. His theory is very specific about what strategy he thinks people use to choose a particular goal. He also introduces into nAch theory the possibility that fear of failure, or the tendency to fail, can affect a person's achievement behavior.

Raynor (1969) suggested the theory was inadequate because only immediate consequences of an activity are taken into account. Raynor pointed out that people also consider long term effects of action. If performance at a task has consequences for future chances to achieve, then achievement motivation should be enhanced in the first task.

In a series of experiments, Raynor (Raynor & Rubin, 1973) found that high nAch people's achievement behavior was enhanced when success at a task was presented as instrumental to achieving future success at another task, while the

achievement behavior of low nAch people was not. Low nAch people performed equally well at a task if success at that task was presented as necessary to attempting another task (contingent condition) or if success at the task was represented as not necessary to the working of further tasks (non-contingent condition).

Other psychologists, who did not work as closely within Atkinson's theoretical framework as did Raynor, have suggested Atkinson's theory is inadequate. Kahneman and Tversky (1973) have shown that people often ignore probability information in making decisions. The experimenters conclude that other beliefs often override mathematical information when people are choosing a course of action. Kukla (1972) thought people might consider the amount of effort they brought to the task as a variable affecting probability as much as the task's difficulty. If they intended to work very hard at a task, their assessment of the probability of success should be greater than if they intended to put little effort into the task.

Attribution of Achievement

Weiner, a student of Atkinson, thought attribution theory would be of help in specifying why nAch leads to successful behavior. He thought that more than assessments about the probability of attaining a desired goal went into

people's evaluation of the world around them.

Attribution theory. The view that people's actions are affected by psychological beliefs about causality stems from Heider's (1958) theory that people make naive analyses of action. According to Heider, people act like naive scientists. They try to decide why an event happened or an action took place. Once a cause has been attributed, the person acts accordingly. Heider's analysis of how people think about and analyze events has resulted in a large body of research which has come to be labeled attribution theory (Kelley, 1967).

Heider (1958) was concerned with how people explain success and failure. He suggested four main causes of achievement or lack of achievement: ability, effort, task difficulty, and luck. When people try to explain why an event turned out successfully, they assess the talent or ability of the person involved, how hard the person worked to achieve success, how hard the task was, and whether anything fortuitous happened.

Validity of four variables as explanations of success. Whether or not these four variables; ability, effort, task, and luck, are used by people to explain success has been investigated in a number of ways. Frieze (1973) asked participants to make a free response answer to the question of why a particular success or failure occurred. She was

able to categorize 86% of the answers into nine categories. In order of frequency of usage, the categories were: ability, immediate effort, task difficulty, luck, something about other people (e.g. teacher bias), mood, stable effort expenditure, fatigue and other unclassifiable causes. This would lend support to Heider's contention that ability, effort, task and luck are the primary causes people think of when trying to explain success.

In a further study by Frieze (1976), participants were asked to rate what kinds of information they would like to have before judging the causes of success. Again, Heider's analysis was supported, although people requested information about luck much less frequently than other variables. This may be because individuals view luck as independent from past experience: A person who was lucky one day may or may not be lucky the next day.

In research involving attribution of success and failure, these four variables have generally been the ones used. There is evidence that people do use them to explain success and failure and they logically seem to be adequate to explain achievement (Heider, 1958).

The four variables can be categorized according to their stability. Ability and task are both stable in the sense that they change slowly, if at all, over time. A person skilled at anagrams on Monday will still be skilled

the following Monday. An anagram task which is simple in January is also simple in February. On the other hand, effort and luck are not as reliable. Just because a person works hard, or is lucky on one occasion, does not necessarily mean he or she will work hard or be lucky on a subsequent occasion.

The four variables can also be categorized on an internal-external dimension. Effort and ability are internal characteristics of the person. Task and luck are external characteristics of the environment.

There appears to be some evidence that success is more likely to be attributed to internal rather than external factors (Frieze & Weiner, 1971). Unexpected outcomes are attributed to unstable variables (Feather, 1969, Feather & Simon, 1973, McMahon, 1972, Weiner, Heckhausen, Meyer, and Cook, 1972). People may consider factors other than the individual characteristics of ability, effort, task and luck in attributing success. They may also take into consideration the more general dimensions of internal-external and stable-unstable when they make a judgment.

Effect of level of nAch on attribution. Level of nAch has been shown to have an effect upon variables people consider important in explaining success (Kukla, 1972). Kukla found that those individuals high in nAch attributed success to effort and to their ability more so than did

those low in nAch. Those high in nAch also saw failure as due to lack of effort much more than those low in nAch, although both gave the same rating to the importance of ability. Kukla interpreted these results as indicating that people high in nAch take more personal responsibility for success than do people low in nAch.

Weiner (1974) suggests that this belief in one's power to influence outcome has an important reward value. If an individual believes what he or she adds to the situation (i.e., the amount of effort expended can bring about success), then when success is achieved the individual accepts the credit. Success for a low nAch person is attributed less to effort than success for a nAch person.

The possibility of using one's effort to bring about success may or may not be especially rewarding to people high in nAch, but it does lead them to choose intermediate-risk tasks. Kukla (1972; replicated by Touhey & Villenez, 1975) found that when high nAch participants were told to view a task as either A) purely one of ability, or B) as one of ability and effort, they chose intermediate tasks more often under the (A) than under the (B) instructions. Low nAch people behaved the same under both instructions. Kukla concluded that high nAch people are more sensitive to the effort dimension (as in instruction B) than the low nAch people.

Weiner and Kukla, through the use of attribution theory, have been able to highlight an important characteristic of people high in nAch. People high in nAch believe in the effectiveness of their own efforts. This belief translates itself into behavior likely to bring about success more often than failure (Weiner, 1974).

SEX DIFFERENCES IN nAch

The validity of the nAch construct rests upon its ability to discriminate between people who are (or will be) successful and people who are not. According to the construct, people with high nAch are more likely to be successful and do well at tasks than are people low in nAch.

In this section, the presence of sex differences in nAch will be investigated. Three trends common in the literature concerning sex differences are presented: 1) Women are lower in nAch than men; 2) Women are more afraid of success than men are; 3) Women's nAch is not aroused by the same cues as is men's nAch. The first two trends are evaluated on the basis of available evidence. They are concluded to be inadequate to explain why women might be less successful than men. The third trend merits further exploration.

Level of nAch

Using nAch theory to examine why women have not been as successful as men leads to a possible hypothesis that women are lower in nAch than men. The fact is, however, that women are in some cases as high as men in nAch (Alper & Greenberger, 1967; Veroff, Wilcox, & Atkinson, 1953). Thus, this particular hypothesis appears invalid as a general principle.

Fear of Sucess

Another possible hypothesis about women's lack of achievement is that women fear success. Horner (1970) stated that women do not want to achieve success as much as they want to be liked. They are afraid that if they are successful, they will not be liked. Contrary to Atkinson's belief, Horner argued that women are not as anxious about failure as they are afraid of success. In other words, Horner believed that success could have a negative valence for people, whereas Atkinson had considered success to have only a positive valence.

Horner (1969) asked a group of college women to tell a story in response to the stimulus "After first term finals, Anne finds herself at the top of her medical school class." Men were given the stimulus "After first term finals, John finds himself at the top of his class." Horner found that over 65% of the women told avoidance of success stories about Anne. These avoidance of success stories contained thematas that no one would like Anne because she was successful and that she was not really feminine because she was so achieving. The men, on the other hand, told success stories about John 90% of the time. Horner concluded women had a fear of success.

Tresemer (1974) reviewed subsequent research investigating the hypothesis that women fear success more than do

men. He points out Horner had only women tell what happened to Anne, the female medical student, and only men tell stories about what happened to John, the male medical student. In experiments by others in which both men and women told stories about Anne's success, men told as many fear of success stories as did women.

A further group of experiments placed Anne in a setting more typical for women - for example, nursing school. In these experiments, Anne's success, first in her class after first term finals, was described in positive terms.

Tresemer concluded fear of success is not exclusively a female attribute. It is also found in men. Both men and women express higher levels of fear of success in response to situations which are unusual, either because few people are successful in a particular area or because sex role stereotypes make it unusual for a male (or a female) to be successful in that area. Therefore, the hypothesis that fear of success is the reason women are less successful than men does not appear valid.

Arousal Cues

Another possible hypothesis is that nAch is not tested properly in women. This hypothesis is supported by the complex results obtained in several experiments dealing with arousal of nAch.

In tests for arousal of nAch through competition with

a standard of excellence related to intellectual and leadership ability, Angelini (1955) found both men and women tested higher under the arousal condition than under the relaxed condition. Veroff, Wilcox, and Atkinson (1953) were able to show this nAch response in males but not in females. Alper and Greenberger (1967) found nAch arousal in females, but the arousal was in both aroused and relaxed conditions. Whereas men have tested consistently in these three experiments, women have not.

Something must be different between men's and women's nAch as tested by the TAT. Until this difference is isolated and related to achievement behavior, nAch cannot be related to success for both genders.

The next chapter focuses upon experimental evidence indicating that there are two types of women. One type of woman has beliefs about achievement similar to those of men, while the other type is different. These two types of women have different attitudes towards women's role.

ATTITUDE TOWARDS WOMEN'S ROLE

Although tests with men have yielded relatively consistent results, experiments concerned with nAch in women have produced confusing and inconsistent results. The reason for the inconsistency with women may be that some experiments have been done with one type of women, while other experiments have been done with another type of women. In this section, the theory will be explored that there are two types of women, and that the difference between the results of different experiments is related to their implicit attitudes towards women's role. Furthermore, the difference in attitude towards women's role is reflected in different beliefs about achievement.

Types of Women

The two types of women can be identified in literature on nAch. Lesser, Krawitz, and Packer (1963) reasoned that women in Angelini's (1955) group, which was composed of college students, were distinguished from groups of women in other experiments. These college women believed that achievement, leadership and intellectual pursuits were im-

important cue to the sex differnces being discussed in this chapter. To replicate Angelini's results, Lesser et al. chose a highly selective, intellectually oriented girls' high school. Participants from this group of females were expected to be aroused by competitive instructions challenging their intellectual and leadership ability. Perhaps fortuitously, in the design of this experiment participants were grouped into achievers and underachievers based on grade point averages. Each individual in the achievers group was paired with an individual of the same I.Q. in the underachiever group. In this manner the experiment was not confounded by I.Q. differences. The TAT consisted of six pictures, three depicting male subjects and three depicting female subjects. Lesser et al. did not find, as they had expected, that both groups had higher nAch scores when given instructions challenging their intellectual and leadership abilities. The experimenters found that the two groups responded significantly differently to the gender of the subject depicted in the stimulus pictures. Achievers showed arousal of nAch to pictures of females, and underachievers showed arousal to pictures of males. The experimenters concluded that the achieving group belived that intellectual and achieving roles were appropriate to women and that the underachievers believed such roles were appropriate to men. They further concluded that these beliefs were

related not only to the relative scholastic successes of the two groups but also to the nAch arousal responses of the two groups.

Lesser (French & Lesser, 1964) performed another experiment at about the same time to investigate the nAch arousal responses of a group of women, including those with intellectual orientation and others more concerned with interpersonal relations and communication. To place individuals into these two groups, French and Lesser devised a Student Attitude Scale which the participants filled out. Women who placed high on items about evaluating the importance of various aspects of women's traditional role and scored low on items concerned with intellectual attainment were given a designation which, for purposes of uniformity in this dissertation, will be called "Traditional." Women who placed low on items concerned with women's traditional role but high on items concerned with intellectual attainment were given a different designation, which will be called "Modern." Before administering the TAT, the experimenters gave half the traditional and half the modern women nAch arousal instructions challenging their intellectual and leadership ability. The other half of the participants received instructions challenging their ability in areas appropriate to women's role. All participants were given an equal number of stimuli featuring men and women. French

and Lesser reasoned that traditional women would have their nAch aroused by TAT instructions challenging their ability to succeed in interpersonal relations. Modern women, similarly, would be aroused by intelligence challenges. This result was, in fact, found. The experimenters had further expected that both modern and traditional women would have a higher arousal to the female than to the male stimuli. Instead, both groups of women had higher nAch scores to the male stimuli when intellectual and leadership ability was challenged. When ability to achieve in women's role areas was challenged, both groups had higher scores to the female rather than to the male stimuli. The experimenters concluded that the unexpected effect of the sex of the stimulus figures reflected participants' belief that intellectual achievement is more appropriate for men and that women's role achievement is more appropriate for women.

In summary, Lesser and her associates found evidence that there are two types of women. The modern women behave in nAch arousal experiments in the same manner as has been found by others to be characteristic of men. Traditional women do not.

Causal Beliefs About Achievement

Having seen that women differ in their sensitivity to arousal cues, the next step examined how women believe they

can achieve success. It is useful to examine whether the two types of women already identified believe they can achieve success in the same way. An experiment by Alper (1974) indicated modern women differ from traditional women in their beliefs about success.

Using the TAT method under relaxed conditions and the thema scoring system of McClelland (McClelland et al., 1953), Alper found no difference in level of nAch for the two groups. She reanalyzed the same data on another basis and obtained different results.

The traditional McClelland scoring system analyzed the protocols on the basis of the number of times an achievement-striving thema is mentioned. Alper's new analysis employed two categories: the number of successes, per se, mentioned in the protocols and the success themata.

It was discovered that modern women told significantly more stories than did traditional women about success (as opposed to striving for success). Their success stories dealt with four main themata about success: 1) hard work pays off; 2) support by an achieving model; 3) achievement through cooperative effort; 4) achievement helped by competition.

Traditional women's stories about success were concerned with different themata: 1) achievement as instrumental to fulfilling some need other than success; 2)

woman as man's helper; 3) if women are to achieve, they must work harder than men.

The Alper experiment indicates modern and traditional women have different beliefs about achievement of success. Modern women are optimistic about success. They view success as the result of hard work. Traditional women believe that hard work does not necessarily result in success.

ATTRIBUTION THEORY

The attribution work of Weiner (1974) and Kukla (1972) is concerned with the same subject matter that Alper (1974) treats in her analysis of TAT protocols. Both attribution theory and Alper's analysis focus upon the causes of success. The findings of Alper may be of some help in understanding the conflicting results on women in the attribution of success.

The conflicting findings in attribution theory experimentation can be described by comparing the results of two groups of experiments. In one group of experiments (Bar-Tal & Frieze, Note 1; Deaux & Emswiller, 1974; Deaux & Farris, 1977; Feather, 1969; McMahan, 1972; Simon & Feather, 1977), women attributed success to luck more so than did men. In a second group of experiments (Luginbuhl, Crowe, & Kahan, 1975; McMahan, 1973; Rest, Nierenberg, Weiner, & Heckhausen, 1973), no difference was found between men and women in attribution of success, even though experimenters looked for differences.

One may speculate, based on Alper's experimental results, that in the experiments in which women did not differ from men in attribution of success, the women may have been modern in their attitude towards women's role. Their achievement beliefs were similar to those of men. In the experi-

ments where women did attribute success to luck more than did men, the women may have been traditional in their attitude towards women's role. They were less willing than men to accept responsibility for success.

There is no experimental evidence to support or refute this supposition.

Research is needed to establish that only one type of women, traditional women, attribute success to luck more than do other women. Moreover, more research needs to be done to delimit the circumstances which make traditional women more likely to attribute success to luck.

NORMATIVE INFORMATION

In experiments by Deaux and Farris (1977) Feather (1969) and Simon and Feather (1973), women attributed success to luck more than men did. Women also predicted they would get lower scores than men. The experimenters explained that the attribution difference follows from classic attribution theory (Weiner, 1974). People who are more surprised by an outcome are more likely to choose the unstable dimension to explain their success than people who are not as surprised by the outcome.

Surprise at outcome is often operationalized in attribution experiments by the difference between predicted score for a task and the actual score the person receives after performing the task. In the three experiments where there were sex differences in attribution of success, there were also sex differences in predicted score. Women had a lower predicted score than did men. Nevertheless, both groups performed the tasks equally well. Women thus had a larger difference than men between predicted and actual results. By definition, they were more surprised than men. This surprise led them to choose an unstable dimension to explain their success.

There is, however, another possible explanation for women's higher attribution to luck than men. Some women,

particularly traditional women, may have a belief in luck independent of external circumstances. One way to test this hypothesis is to find a means of inducing women to vary their predictions of success and then observe if their attribution to luck is changed.

Deaux and Farris modified predictions of success by varying participants' perception of task difficulty. This manipulation was accomplished by presenting participants with different normative information about the task before the participants made their predictions.

Participants can be assumed to base their predictions on normative information given about the task to be performed. The norm is a stated average score for the task. The norm information can be modified to make the task appear difficult or easy to the person by the statements "men do better" (male norm); or "women do better" (female norm) (Deaux & Emswiller, 1971; Stein, 1971; Stein, Pohly, & Mueller, 1971). Men and women react differently to the norms. When men and women are both given the male norm, men predict they will do better at the task than women predict they will do (Deaux & Emswiller, 1974; Deaux & Farris, 1977; Taynor & Deaux, 1973). When the female norm is given typically there is no significant difference in prediction between men and women participants (Deaux & Emswiller, 1974; Deaux & Farris, 1977; Taynor & Deaux, 1974). Parentheti-

cally, it should be mentioned that other types of normative information can be given: male-female norm, in which gender is mentioned but neither gender is said to do better; and neutral norm, in which there is no mention of gender at all. These latter two norm conditions were not used in the Deaux and Farris experiment but were used in one of the experiments to be reported in detail later in the dissertation.

In the Deaux and Farris experiment, which used both male and female participants, women changed their predictive scores in response to different normative conditions, as would be expected. They did not, however, change their attribution to luck. Thus, based on this analysis of the Deaux and Farris work, luck does appear to be an inherent belief of women, unrelated to predictions of success.

It should be noted Deaux and Farris did not interpret their data this way. They concluded women's attribution to luck was caused by their low prediction of success.

The Deaux and Farris experiment did not investigate whether attitudes towards women's role made a difference in women's attribution to luck. They did not suggest that one reason they, unlike other research in attribution of success (Luginbuhl, Crowe, & Kahan, 1975; McMahan, 1973; Rest, Nierenberg, Weiner, & Heckhausen, 1973), found gender differences was because the participants in the Deaux and

Farris experiment were more traditional than women participants in the other research. The review of the literature on research on nAch using the TAT suggested that gender differences in achievement behavior are related to attitudes towards women's role. An experiment should be done to see if gender differences in attribution in an achievement situation are also related to attitudes towards women's role.

CHAPTER II: EXPERIMENT I

RESEARCH PROBLEMS AND HYPOTHESES

Women's nAch has been an enigma to researchers. Women's behavior often does not conform to the expectations derived from nAch experiments performed with men. Behavior of men is predicted by their nAch. They are more predictable in the arousal of their nAch and in their acceptance of responsibility for achieving success. Research is needed to explain why women do not behave as nAch would predict.

Evidence suggests that there are two types of women, modern and traditional, differing in their attitude toward women's role. Modern women reject the belief that women must accept a different role from that of men. Modern women believe achievement is as appropriate for women as for men. If modern women have the same beliefs as do men, i.e. achievement is appropriate to their role, then modern women should accept responsibility for achievement in the same way as do men: Those high in nAch should attribute success to ability and effort more than do those low in nAch.

Traditional women accept the conventional women's role which concentrates on interpersonal relationships and communication. They do not judge the seeking of achievement as

appropriate for themselves. Therefore, they attribute their success to luck more than do modern women or men. The traditional women are also modest about their expectations for success.

The issues raised in the preceding discussion lead to a number of hypotheses which will be tested in two experiments. The first experiment tests how normative information, nAch and AWS affect how men and women predict and judge their own success.

The second experiment tests whether attitude towards women's role (AWS) interacts with viewpoint (i.e., the judgement of one's own or someone else's work) and gender in the attribution of success.

The method and results of Experiment I will be presented, then the introduction to Experiment II, method and results. Finally, both experiments will be discussed together at the end of the dissertation.

Hypotheses

The hypotheses that were tested in Experiment I include the following:

I. Traditional women attribute success to luck more than do modern women or men.

II. Traditional women are affected by normative information when they predict performance in the following

way:

A. Traditional women who receive the male norm, i.e., they are told males do better, make the lowest prediction of the traditional women.

B. Traditional women who receive the female norm, i.e., they are told females do better, make the highest prediction of the traditional women.

C. Traditional women who receive the male-female norm, i.e., gender is mentioned but neither sex is labeled as more successful, make predictions intermediate to those made by traditional females receiving the male or the female norm.

D. Traditional women who receive the neutral norm, i.e., there is no mention of gender, have predictions similar to traditional women who receive the male-female norm.

III. Men and modern women attribute success to ability more if they are high than if they are low in nAch.

IV. Men and modern women attribute success to effort more if they are high than if they are low in nAch.

METHOD

Overview

Participants were first tested for their level of nAch using a paper and pencil test. They were then given normative information about an anagrams task. After predicting how many anagrams they thought they could solve, participants then did the anagrams. Next they made attributions as to the reasons for their level of success. Finally, they took a second test which measured their attitude towards women's role.

Design

Four factors were selected for study: sex of participant (male or female), level of nAch (high or low), level of attitude towards women's role (modern or traditional), and normative information (male, female, male-female and neutral). This selection resulted in a 2 x 2 x 2 x 4 design with 32 cells.

Independent Variables

Sex of participant. Although several of the psychology classes in which this experiment was administered had a preponderance of women, no attempt was made to select participants by sex. Therefore, data were obtained from fewer men than women: 135 men and 192 women.

nAch. The nAch level was assessed by the short form of the Mehrabian Achievement Scale (Mehrabian & Banks, 1975). The scale consists of two questionnaires: one for males and one for females. In order to establish two levels of nAch, those participants who made a score equal to or higher than the mean were assigned to the "high" level of nAch; those whose score was lower than the mean were assigned to the low nAch group. Males were assigned on the basis of the mean for males, and females were assigned on the basis of the mean for females. The male form and the female form of the Mehrabian Scale are presented in Appendix A.

Advantages of the scale: The Mehrabian scale was chosen in order to be consistent with similar studies in attribution (Kukla, 1972; and Weiner, 1974), and thus enhance the validity and generalizability of the present study.

Although the TAT test (McClelland, 1953) has been frequently used, it has not been employed in research on attribution. In addition to the major reason for chosing Mehrabian's scale, it was chosen over the TAT for a number of other reasons. First, the Mehrabian scale, unlike the TAT, includes questions concerned with fear of failure, a dimension Atkinson (Atkinson and Raynor, 1974) has shown can modify achievement behavior and therefore should be taken into account along with nAch. Second, the Mehrabian scale

is easier to administer and score than the TAT. As it is a paper and pencil test, it can be given to a large group of people without any special equipment. No special training is required to do the scoring, and a final score can be arrived at quickly. The third reason the Mehrabian scale was chosen over the TAT is the outdated appearance of the TAT. The TAT pictures are sepia-colored, and the figures wear old-fashioned clothing and have out-of-date hair styles. People taking the TAT have been shown to be sensitive to types of people and types of occupations depicted in the pictures (Alper & Greenberg, 1967; Veroff, Feld, & Crockett, 1960). They may also be affected by old-fashioned and outdated looking pictures.

Other tests of nAch, such as the Iowa Picture Interpretation Test (Hurley, 1955), the French Test of Insight (French, 1958), and the measure of achievement in the Edwards Personal Preference Schedule (Edwards, 1959), have not been used widely in studies of achievement. Moreover, none has any better correlations with the TAT than does the Mehrabian Scale (Atkinson & Litwin, 1960; Barnette, 1961; de Charms, Morrison, Reitman, & McClelland, 1955).

Male and female forms: The two forms of the Mehrabian scale denote a tacit acceptance of male-female differences in quality of nAch. The male form tends to emphasize achievement in business and athletic situations. The

female form focuses on achievement in domestic tasks and interpersonal relations.

There is no difficulty interpreting the results if males exercise their achieving needs in the "male" area of activity and females in the "female" area. But if a female, for example, sees the "male" area as a more appropriate arena for achievement behavior, then that female's level of nAch may not be measured accurately. She must give achievement-type answers to what she views as non-achievement situations. Thus the Mehrabian scale may not be as good a test of female nAch as male nAch.

Reliability: Reliability information is available on both Mehrabian scales. The female form tends to be less reliable than the male form, perhaps reflecting the limited knowledge about female nAch behavior. Using the Kuder-Richardson procedure, internal reliability for the male form was .72 and for the female form .61. The split-half reliability was .69 for the male form and .55 for the female form of the scale.

A test-retest (after ten weeks) analysis of reliability had a coefficient of .78 for the male form and .72 for the female form (Mehrabian, 1969). The poorer showing for the female form is perhaps a reflection of the limited knowledge about female nAch behavior.

Validity: The Mehrabian and Banks (1975) manual

reports data on the divergent validity of the tests based on two studies. Crowne and Marlow (1960) found the Mehrabian scale correlated .21 for males and .28 for females with the Social Desirability Scale. Stumfer (1973) found negative correlations ($r = -.19$ for the male, and $r = -.35$ for the female form) with Mehrabian's Affiliative Scale. In a test of known groups validity, Reid and Cohen (1973) found the Mehrabian scale discriminated between four-year Bachelor of Education degree candidates and those students who were in the less rigorous three-year Teacher's Certificate program.

AWS. The shortened form of the Attitudes Towards Women Scale (Spence, Helmreich, & Stapp, 1973), or AWS, was used to assess each participant's attitude towards women's role. In order to establish two levels of AWS, those participants who made a score at or higher than the mean were assigned to the "modern" AWS group; those whose score was lower than the mean were assigned to the "traditional" AWS group. The AWS scale is presented in Appendix A.

Women scored on the average ten points higher than men. Consequently, there were more women in the high, or modern, group than in the low, or traditional, group. The women were distributed as follows: 119 in the modern group and 60 in the traditional group. The men were distributed in the opposite way: 36 in the modern group and 90 in the traditional group.

The AWS was chosen because it measures attitudes towards women's role in a number of specific areas: the rights of women in vocational and intellectual roles, dating behavior, and marital relationships.

Reliability: The AWS was carefully constructed by Spence (Spence & Helmreich, 1972) to maximize reliability. An item analysis was done to eliminate questions which did not discriminate between the highest and lowest quartiles. Spence, also performed a factor analysis to eliminate items not loaded on any of the three main factors: attributes of a "conventional" woman in her relationship with men, equality of opportunity for women, and masculine superiority and the patriarchal family.

Validity: Known groups validity information is reported by Spence and Helmreich. As they expected, males were more traditional than females, and parents were more traditional than children.

Shortened form: The original AWS contained 55 statements. In order to shorten the test, Spence and Helmreich selected 25 statements as most important. This short version had a high correlation ($r = .97$) with the original AWS. Little information is lost by using the shortened version.

Correlation of nAch and AWS. In the present research, there was a significant correlation ($p < .002$ for all par-

ticipants; $p < .046$ for males and $p < .001$ for females) between nAch and AWS. The actual correlations were not very large: $r = .15$ overall, $r = .14$ for males, and $r = .22$ for females. The correlation was positive: i.e., Modern views of women's role correlated with high nAch, and traditional views of women's role correlated with low nAch. This positive correlation meant participants were distributed unevenly through the 32 cells of the design. The distribution of participants is reported in Table 1 and reflects only participants whose data were used in the statistical analyses. The data on some participants were not used, for reasons discussed in the section on participants.

Normative information. Each participant was told he or she would be asked to solve 15 anagrams. Then the participant was told that a previous group, given the same anagrams set, solved an average of eight. For the male norm, the statement about the average number solved was expanded with a statement that males did better than the average. For the female form, the expansion said that females did better than the average. For the male-female norm, the previous group was said to have been made up of both males and females, i.e., gender was mentioned but neither gender was highlighted as doing better. For the neutral norm condition, the group was labeled as "students," and there was no mention of gender. The instructions are reported in Ap-

Table 1

Number of Participants Per Cell Categorized by Sex, Norm, nAch and AW

	Norm				
nAch	Male	Female	Male-female	Neutral	Total
			Males		
High					
Modern	5	6	6	7	24
Traditional	9	14	13	6	42
Low					
Modern	2	5	2	3	12
Traditional	15	6	11	16	48
			Female		
High					
Modern	16	17	15	14	62
Traditional	7	8	6	6	27
Low					
Modern	13	13	14	17	57
Traditional	8	7	10	8	33

pendix A.

A quarter of both male and female participants received the male norm, a quarter received the female norm, a quarter received the male-female norm, and a quarter the neutral norm. The normative information was distributed in order, with the first person to do the experiment receiving the male norm instructions, the second person the female norm, the third the male-female norm, and the fourth the neutral norm. Males were given instructions from an ordered set while females were given instructions from a separate ordered set. Participants received their norm instructions at random. Males received an equal number of the four normative conditions, and females received an equal number of the four normative conditions.

Task

The task performed consisted of 15 anagrams: evoltr, ariver, poleic, teffec, rsuga, damaeg, borla, lownc, itfru, tmomen, ypart, intra, ockcl, enque, and rassg. These anagrams were very easy to solve, and no participant was expected to unscramble fewer than the stated norm average of eight. Deaux and Farris (1977) used this set after finding participants were unable to do as well or better than the average at a set of more difficult anagrams.

The anagrams were printed in a booklet, one to a page.

Success

Participants had to be successful at the anagrams task in order for their data to be included in the statistical analyses. Success was defined as doing as well as or better than predicted. This definition ruled out people who made very high predictions of success but were unable to achieve their predicted score. The definition includes people who believe they are very poor at anagrams. By considering their level of ability in their prediction, these people are able to achieve their predicted score. The definition of success excludes people who overestimate their ability and includes all levels of ability. Twelve participants (five males and seven females) were eliminated because they were not successful at the anagrams task.

Dependent Variables

Participants were asked for nine responses which were used as dependent variables. The nine responses were: predicted score at anagrams, four attributions of success to ability, effort, task, and luck measured on Likert scales, and four attributions of success to ability, effort, task, and luck measured as a percent.

Prediction. The first response variable was the score participants predicted they would make on the anagrams

task. The prediction was made by participants immediately after they read the normative information and before they were given the anagrams.

Attribution. Participants were asked to attribute their success at anagrams to four variables: ability, effort, task, and luck. The meaning of each variable was explained with the same wording used in the Deaux and Farris experiment. The instructions are reported in Appendix A.

Two types of rating scales were used for participants to make judgements as to the importance of ability, effort, task, and luck.

Likert response: The first scale was a Likert scale. Participants were asked to judge each of the four explanations of success on a five point linear scale. Each scale was labeled as follows: "Not a cause" was written under the left end of the scale; "Somewhat a cause" was written under the center of the scale; "Very much a cause" was written under the right end of the scale. Rating scales are reported in Appendix A.

Percentage scale: The second method of judgement used the distribution of 100 percentage points between the four causes of success. Participants were asked to apportion the points among ability, effort, task and luck. They were asked to make sure the total added up to 100. The rating sheet is reported in Appendix A.

participants

Participants were 327 students enrolled in psychology classes at Loyola University in 1978. Fifteen of the participants were in an advanced psychology class, and the rest were enrolled in introductory psychology classes. Students enrolled in the introductory classes were given credit toward their final grade through participation in this experiment.

The data of ten participants (four males and six females) were eliminated from the analysis because the participants did not answer all the questions in the AWS questionnaire. Twelve others (five males and seven females) were eliminated because they were not successful at the anagrams task. Success at anagrams was defined as the solution of at least as many anagrams as the participant had predicted would be solved. A total of twenty-two participants was dropped, leaving 305 participants whose data were analyzed.

nAch: Loyola students were not significantly different in their level of nAch from the normative sample reported by Mehrabian and Banks (1975) when tested by a t-test. Loyola men had a mean of 7.8 and a standard deviation of 17.2 on the Mehrabian scale. Loyola women had a mean score of 5.9 and a standard deviation of 19.2. Mehrabian and Banks reported a mean of 9 and a standard devia-

tion of 18 for men and a mean of 5 and a standard deviation of 19 for women. The scores could range from minus 104 to plus 104.

AWS: A comparison, using a t-test, between Loyola students' scores on the AWS and scores of the University of Texas students to standardize the tests showed no statistically significant differences between the two groups. Men at Loyola had an average score of 46.85 with a standard deviation of 10.14. Women at Loyola had an average score of 55.72 with a standard deviation of 10.87. In the University of Texas sample, the men had a mean of 44.80 and a standard deviation of 12.07; the women, a mean of 54.26 and a standard deviation of 11.68. The possible range of scores was from zero to seventy-five.

Procedure

Participants were tested either during their regular class time or outside of class time. Participants in classes were tested either as part of a large class of about 75 students or a medium class of 12 to 15 students. An analysis of variance comparing the results from participants doing the experiment in a large class, a small class, or in a group outside of class time showed no meaningful differences in participants' attributions or in their estimated scores.

At the start of a session, each participant was handed the Mehrabian Achievement Scale test from a stack held by the experimenter. The male form of the Mehrabian scale was on the top half of the pile and was given to men. The female form of the scale was on the bottom half of the pile and was given to women. Once everyone had received a copy, they were asked to complete all the questions.

When everyone had finished, a sheet of instructions was passed out to each participant. The instructions were as follows:

> We are trying to discover in this experiment why people do well or poorly in unscrambling anagrams into coherent words. You will be given a series of 15 anagrams, one at a time, and will be allowed only a certain amount of time to solve each anagram by rearranging the letters to form a meaningful word. Your time on each anagram is limited. The experimenter will tell you when to stop and go on to the next one.
>
> When this test was previously given, the average number solved for that group of students was 8. Please estimate what you think your own performance as a student will be. Write down an estimate of the number of anagrams you think you will solve.
>
> Estimate _____
>
> Now look up for further directions.

The second paragraph represents the normative information for the "neutral" condition. For the male-female con-

dition, the word "students" was replaced by "males and females." For the "male" condition, after the number 8 the following phrase was inserted: "although males typically did better than this ." The same was done for the "female" condition, using the word female instead of male. In addition, in each of the three norm conditions where gender was mentioned, the instructions required participants to write their sex underneath the estimate. Instruction sheets for all norm conditions are reported in Appendix A.

After everyone looked up, the experimenter asked if all had recorded their estimates. She passed out booklets with one anagram printed on each page. She then asked the participants to work the first anagram. Twenty seconds were allowed for each anagram. When time was up, the experimenter told participants to turn to the next page. Participants were not allowed to proceed on their own or to turn back to check previous answers. When all the anagrams had been worked, participants were asked to count how many of the fifteen they were able to solve.

They then received the final handout of the experiment. They were given seven sheets, stapled together, which had printed on them a description as to the causes of success, the two types of attribution, and the AWS test. The experimenter explained: "I now want you to make a judgement of some of the reasons behind your performance.

Please do the pages of this last section in order. When you have finished, bring everything to me."

The first two pages of the final section gave a rather extensive description of the four possible causes of success. The wording came from an experiment by Feather and Simon (1971). Deaux and Farris (1977) used similar wording. The description is reported in Appendix A.

The next page contained the Likert scale on which to report attributions. The four possible causes of success were listed as skill and ability, tried hard, easy task, and good luck. Each cause was followed by a five-point scale ranging from "not a cause" at the left hand extremity to "somewhat a cause" in the center, and "very much a cause" at the right hand extremity. The order in which the causes were listed on the page varied so that no one cause appeared in the first position all the time. There were four orders. The different orders were distributed at random to participants. At the bottom of the page participants were asked to evaluate whether males or females had done better at anagrams in a previous experiment. They marked their answer on a five-point Likert scale, labeled "males do better" under the left extremity, "equal" under the center, and "females do better" under the right extremity.

On the fourth page, participants were asked to make a second judgment as to the causes of success. The page con-

tained instructions to apportion 100 percentage points among the four causes.

The last three pages of the final section consisted of the shortened form of the Attitudes Towards Women Scale.

Participants were given a paperclip and asked to clip all their sections and the anagrams booklet together. When all the materials had been collected, the experimenter debriefed the participants. She explained to them that the normative information on the anagrams was incorrect. The average had been set low enough so most participants would do better. The purpose of the experiment was explained. Participants were encouraged to ask any questions they might have. The few that were asked were answered. Participants were then thanked for their cooperation and were dismissed.

Statistical Analyses

T-tests were used to test the significance of differences stated in the hypotheses. Only differences equal to or less than .05 are reported as significant.

A multivariate analysis of variance was performed on the data. The computer program used computed an overall *F* for each main effect and interaction. All the data on all the dependent variables were included in the calculation of the overall *F*. The program also computed an *F* for each particular dependent variable. Only when the overall *F* was

significant were the individual Fs then examined for degree of statistical significance.

RESULTS

Overview

The attribution to ability was the only variable which produced significant group differences. Modern women and traditional men were the ones who exhibited differences due to level of nAch: those high in nAch made a greater attribution of success to ability than those low in nAch.

The results of t-tests performed by hypothesized differences are presented first. Next the results of the multivariate analyses on the four factors and the nine dependent variables are given. Then a multivariate analysis of variance was performed to test whether participants understood and remembered the gender-linked normative information. Finally, the results of an analysis of participants' number of correctly solved anagrams are given.

Luck

Hypothesis I was not supported. Traditional women had been hypothesized to make a higher attribution to luck than modern women or men. Instead, as can be seen in Table 2, the attribution to luck of traditional women is similar to that of traditional men ($t(136.98)=.62$, $p < .54$ for the Likert scale and to that of $t(102.43) = -.66$, $p < .51$ on the percentage scale), and modern women ($t(146.79) = -.82$, $p < .41$ on the Likert scale and $t(124.48) = -.06$, $p < .96$ on

Table 2

Mean Attribution to Luck on Both Scales
for Men and Women, Modern and Traditional in AWS

	AWS	
Sex	Modern	Traditional
	Likert Scale	
Men	2.20	2.55
	(1.05)*	(1.04)
	n=36	n=90
Women	2.58	2.45
	(1.17)	(.92)
	n=119	n=60
	Percentage Scale	
Men	10.15	11.90
	(12.48)	(9.13)
	n=36	n=90
Women	13.23	13.12
	(12.81)	(12.12)
	n=119	n=60

*Numbers in parentheses are standard deviations

the percentage scale).

Predicted Score

Hypothesis II was not supported. There were no significant differences in prediction according to sex of participant, level of AWS or type of normative information. Traditional women were not significantly lower ($t(55.67) = .01$, $p < .99$) in their predicted score if they received the male norm than if they received the female norm, although, as can be seen in Table 3, the means are in the direction hypothesized. The predicted score given by traditional women receiving the neutral or the male-female norm fell between the scores predicted with the male and with the female norm but are not significantly different from them.

Ability

Hypothesis III was only partially supported. Modern females and both modern and traditional males had been hypothesized to attribute success to ability more if they were high than if they were low in nAch. This was true for modern females ($t(116.90) = -2.12$, $p < .036$ for the Likert scale, and $t(114.18) = -2.19$, $p < .030$ for the percentage scale) as well as for traditional males ($t(82.82) = =1.91$, $p < .060$ for the Likert scale, and $t(75.49) = -2.56$, $p < .012$ for the percentage scale). Modern males did not make a significantly different attribution ($t(17.84) = .06$, $p < .95$

Table 3

Mean Prediction of Score for Men and Women Modern and Traditional in AWS, for Male, Female, Male-female and Neutral Norm Conditions

	AWS	
Norm	Modern	Traditional
	Men	
Male	8.00 (1.63)* n=7	8.50 (1.96) n=24
Female	8.09 (2.07) n=11	8.05 (2.19) n=20
Male-female	9.50 (2.88) n=8	8.63 (2.36) n=24
Neutral	8.60 (1.90) n=10	8.59 (2.46) n=22
	Women	
Male	8.24 (2.31) n=29	7.87 (2.33) n=15
Female	8.23 (2.05) n=30	8.73 (1.75) n=15
Male-female	7.83 (2.36) n=29	8.19 (2.46) n=16
Neutral	8.39 (1.75) n=31	8.36 (2.74) n=14

on the Likert scale, and $t(17.46) = .00$, $p < .97$ on the percentage scale) to ability if they were high than if they were low in nAch. The means for attribution to ability according to sex, level of AWS and level of nAch are reported in Table 4 for the Likert scale responses and in Table 5 for the percentage scale responses.

Effort

Hypothesis IV was not supported. Modern women did not have a different attribution to effort if they were high than if they were low in nAch ($t(114.87) = -.40$, $p < .69$ for the Likert scale, and $t(117.00) = .48$, $p < .63$ for the percentage scale). Modern men did not differ ($t(26.93) = -.25$, $p < .80$ for the Likert scale, and $t(22.75) = -1.21$, $p < .24$ for the percentage scale) in attribution to effort due to nAch level, nor did traditional men ($t(84.22) = -.76$, $p < .45$ for the Likert scale, and $t(86.67) = -.27$, $p < .78$ for the percentage scale.

Multivariate Analysis of Variance

A multivariate analysis of variance was performed on the data. The summary of this analysis is reported in Table 19 in Appendix C. Taking only eight dependent variables as a whole, the main effect of nAch was significant ($F(8,266) = 2.11$, $p < .035$). Among the dependent variables, only differences in ability as judged on the percentage scale

($F(1,273) = 10.05$, $p < .002$) were significant. Participants assigned a higher percentage to ability if they were high (= 30.89) than if they were low (= 24.95) in nAch.

The means and standard deviations of all 32 cells are reported in Tables 29 through 33 in Appendix C.

Three Levels of nAch

Sorrentino and Short (1977) had suggested that often the effect of high and low nAch groups is masked by people with an intermediate level of nAch. Following the suggestion of Sorrentino and Short, nAch was also split into a middle level nAch group, and two extreme nAch groups: high and low nAch. The middle group for males ranged from a score of 1.26 to a score of 16.74. The middle group for females ranged from minus .34 to plus 16.06. A multivariate analysis of variance, using three levels of nAch, proved to be no more useful in explaining the results than the analysis using two levels of nAch. Therefore, the results using three levels of nAch will not be reported here.

Correlations Between Dependent Variables

The correlations between dependent variables is presented in Table 8 in a multi-trait multi-method matrix. Correlations tend to be higher between methods than between traits. Predicted score has a high positive correlation with ability. Task is negatively correlated with all the

Table 4

Mean Attribution to Ability on the Likert Scale for Men and Women, Modern and Traditional in AWS and High and Low in nAch

	AWS	
nAch	Modern	Traditional
	Men	
High	3.21	3.78
	(.81)*	(.91)
	n=25	n=42
Low	3.23	3.42
	(1.02)	(.81)
	n=12	n=48
	Women	
High	3.41	3.27
	(1.08)	(.89)
	n=62	n=27
Low	3.00	3.53
	(1.02)	(1.07)
	n=57	n=33

*Numbers in parentheses are standard deviations

Table 5

Mean Attribution to Ability on the Percentage Scale for Men and Women, Modern and Traditional in AWS and High and Low in nAch

	AWS	
nAch	Modern	Traditional
	Men	
High	25.38	34.42
	(17.74)	(17.80)
	n=25	n=42
Low	25.42	25.81
	(23.66)	(13.39)
	n=12	n=48
	Women	
High	30.54	30.44
	(16.10)	(14.07)
	n=62	n=27
Low	23.81	25.52
	(17.31	(13.69)
	n=57	n=33

*Numbers in parentheses are standard deviations

Table 6

Mean Attribution to Effort on the Likert Scale for Men and Women, Modern and Traditional in AWS and High and Low in nAch

	AWS	
nAch	Modern	Traditional
	Men	
High	3.17	3.35
	(1.09)*	(1.05)
	n=25	n=42
Low	3.08	3.19
	(.87)	(.97)
	n=12	n=48
	Women	
High	2.95	2.97
	(1.10)	(1.22)
	n=62	n=27
Low	2.87	3.18
	(1.15)	(1.19)
	n=57	n=33

*Numbers in parentheses are standard deviations

Table 7

Mean Attribution to Effort on the Percentage Scale for Men and Women, Modern and Traditional in AWS and High and Low in nAch

	AWS	
nAch	Modern	Traditional
	Men	
High	23.46	23.62
	(15.07)*	(14.54)
	n=24	n=42
Low	16.75	22.77
	(14.31)	(14.71)
	n=12	n=48
	Women	
High	22.17	23.41
	(14.75)	(16.03)
	n=62	n=27
Low	20.91	21.76
	(13.61)	(14.03)
	n=57	n=33

*Numbers in parentheses are standard deviations

other attributions.

Norm Manipulation Check

Participants were asked to rate on a five point scale whether males or females had done better at anagrams in a previous experiment. A multivariate analysis of variance showed a significant difference ($F(3,354) = 107.41$, $p < .0001$) for the main effect of normative information. As can be seen in Table 9, the means for the neutral and the male-female normative information conditions are in the middle of the scale. The scale ranged from one to five, with "males do better" appearing at the one end and "females do better" at the five end. Participants receiving the male norm had very low scores and participants receiving the female norm had very high scores.

Performance on the Task

The average number of anagrams solved by participants was 12.64 (standard deviation = 1.94). A multivariate analysis of variance showed no significant differences among any of the groups in number of anagrams solved. No one type of individual was any better at anagrams than any other type of individual.

Table 8

Multi-trait Multi-method Matrix of the Nine Dependent Variables

	Likert				Percentage			
	A	E	T	L	A	E	T	L
Likert								
Ability(A)								
Effort(E)	.09							
Task(T)	.05	-.21**						
Luck(L)	-.12*	.07	-.11					
Percentage								
Ability	.54**	-.04	-.22**	-.14*				
Effort	-.07	.61**	-.38**	.06	-.15*			
Task	-.19**	-.38**	.55**	-.24**	-.53**	-.57**		
Luck	-.32**	-.01	-.28**	.57**	-.40**	.06	-.40**	
Predicted Score	.31**	-.12*	.06	-.20**	.26**	-.18*	.05	.24*

* $p < .05$

** $p < .001$

Note: Multi-method unitrait correlations are underlined

Table 8

Multi-trait Multi-method Matrix of the Nine Dependent Variables

	Likert				Percentage			
	A	E	T	L	A	E	T	L
Likert								
Ability(A)								
Effort(E)	.09							
Task(T)	.05	-.21**						
Luck(L)	-.12*	.07	-.11					
Percentage								
Ability	.54**	-.04	-.22**	-.14*				
Effort	-.07	.61**	-.38**	.06	-.15*			
Task	-.19**	-.38**	.55**	-.24**	-.53**	-.57**		
Luck	-.32**	-.01	-.28**	.57**	-.40**	.06	-.40**	
Predicted Score	.31**	-.12*	.06	-.20**	.26**	-.18*	.05	.24**

* $p < .05$

** $p < .001$

Note: Multi-method unitrait correlations are underlined

Table 9

Mean Ratings of Judgements of Male or Female Superiority at Anagrams for Men and Women and for the Male, Female, Male-female and Neutral Norm Conditions

	Sex		
Norm	Men	Women	Average
Male	1.85*	1.75	1.78
	(.88)**	(1.21)	(1.09)
	n=29	n=45	n=74
Female	4.33	4.50	4.45
	(.87)	(.89)	(.89)
	n=26	n=48	n=74
Male-female	2.70	2.78	2.73
	(.87)	(1.09)	(1.06)
	n=31	n=49	n=80
Neutral	3.01	2.85	2.90
	(.79)	(1.12)	(1.03)
	n=30	n=46	n=76

* A low number indicates males are judged to be better; a high number indicates females do better.

** Numbers in parentheses are standard deviations.

Comments

A discussion of the results will be postponed until after Experiment II is presented. A discussion of Experiment I at this point would only make Experiment II more difficult to understand as the reasoning behind Experiment II was not based on the results of Experiment I.

The two experiments were designed simultaneously, and the theoretical background of Experiment II is similar to that of Experiment I. Because the design and materials used are similar in both experiments, most of the comments about one experiment pertain to the other.

CHAPTER III: EXPERIMENT II

RESEARCH PROBLEM AND HYPOTHESES

Experiment I tested whether or not attitude toward women's role made a difference in women's attribution of their own success. The level of AWS had been expected to affect predicted performance, attribution to luck, and dependance on the level of nAch, attribution to ability and effort. In Chapter I, Introduction to Experiment I, the suggestion was made that traditional women do not accept personal responsibility for their own success but rather tend to explain success as due to luck more than do modern women or men.

Experiment I dealt only with personal success. A second experiment was devised to examine women's beliefs about the reasons for the success of others.

If, as hypothesized in Experiment I, traditional women do not take personal responsibility for success, it is possible they think that other women are not responsible for their successes either. On the other hand, traditional women might attribute successes of others to effort rather than luck, even though they attribute their own success to luck. The second experiment tested these two alternatives.

Feldman-Summers and Kiesler (1974) found support for

the second alternative, i.e., women attribute success of other women to effort. Two studies were performed in which participants (observers) made attributions about the causes of other people's (actors') successes. Observers in the two studies were asked to evaluate: 1) reasons for students' performance in solving logical and mathematical problems, and 2) reasons for physicians' successes. In the logic/mathematical study, observers were asked to judge a fictitious work sheet said to have been taken from a previous study. Two separate worksheets were used, one labeled "Jack Brehm" to suggest that a male had prepared it, and one labeled "Joan Brehm" to indicate a female had prepared it. In the physician study, observers were given written descriptions of successful doctors, both male and female, represented as highly successful. Several descriptions were used, varying as to medical specialty and whether or not the physician had a father whose practice he or she had assumed. Observers in both studies were asked to attribute the actors' success to ability, motivation (effort), task difficulty and luck. In both cases, women were given more credit for effort than men by observers of both sexes. Success of men and women was attributed equally to luck.

The Feldman-Summers and Kiesler results are not the same as found by Deaux and Farris (1977), who worked with actors rather than observers. The differences in findings

could be due to differences in populations from which the participants were drawn. They could also have been related to task differences. The observer-actor difference could also have been a major factor. Jones and Nisbett (Jones, Kanouse, Kelley, Niscett, Valins, & Weiner, 1972) have suggested that people who are actors have a different set of information about the situation than do people who are observers. This leads actors to make external attributions more often than observers and observers to make internal attributions more often than actors.

Experiment II was designed to test the possibility that traditional women's attribution to effort and to luck depended on whether they were observers or actors. If the results from Experiment II coincided with Experiment I, the viewpoint difference theory would not be supported, leaving some other reason to explain the different results cited above for Feldman-Summers and Kiesler versus Deaux and Farris.

Participants in Experiment II as well as Experiment I were asked to predict how well they thought they might do at the task. This was in order to ensure the observers would see the actual performance at the task as a "success" in the same way as participants in Experiment I.

Experiment II was designed and run before the results of Experiment I were analyzed. In fact, part of Experiment

II was run before the testing was completed in the first experiment. This design permitted all data to be collected in a practical time period. Moreover, it permitted participants for both experiments to be sampled from the same population.

Hypotheses

The following hypotheses were tested in Experiment II:

I. Traditional women attribute success to luck more than modern women when they were actors.

II. As observers, traditional women made a higher attribution to effort if they receive the male norm than if they receive the female norm.

III. Traditional women, irrespective of their viewpoint, predict they will be less successful at their task when they receive the male norm than when they receive the female norm.

METHOD

Overview

Participants were tested in groups. Each group was assigned either to be actors or observers. The first group was necessarily an actor group, but thereafter several small groups were selected at random to be observers. Actors participated in Experiment I and simultaneously provided a comparison base for Experiment II. Only Experiment II required observers.

All participants were tested first for their level of nAch with a paper and pencil test. Then they were identified as actors or observers and given normative information about an anagrams task. Actors predicted how many anagrams they thought they could solve, and then did the anagrams. Observers predicted how many they could solve if given the test, and then looked over an anagrams test booklet prepared in Experiment I. Actors and observers then made attributions as to the reasons so many anagrams were solved. Finally all participants took a test which measured their attitude towards women's role.

Design

Four factors were selected for study: Viewpoint of participant (actor or observer), Sex of participant (male or female), Level of AWS (modern or traditional), and Normative

information (male or female). This selection resulted in a 2 x 2 x 2 x 2 design of 16 cells.

The factor of nAch was of no concern in the designing of Experiment II. Nevertheless, in order to keep the procedure of the two experiments as identical as possible, participants in Experiment II were given the nAch test. These data were available for analysis with the four factors of Experiment II.

Independent Variables

Viewpoint. There were two levels of viewpoint, actor and observer.

Actors were participants who worked the anagrams task themselves, then made attributions as to the causes of their own success. All participants in Experiment I were actors. Data on 151 participants, those who received the male or the female norm, from Experiment I were used in Experiment II for the actor condition in Experiment II.

Observers were 57 participants who did not take the anagrams test. Instead, observers looked over another person's test results, i.e. a booklet of anagrams with most of the anagrams solved.

Sex of participant. No attempt was made to have an equal number of male and female participants. There were fewer male than female participants: 90 men and 118 women.

There were 62 male actors and 89 female actors. Observers were more evenly divided: 28 males and 29 females.

AWS. The shortened form of the Attitude Towards Women Scale (Spence, Helmreich, & Stapp, 1973) was used to assess participants' attitudes towards women's role.

AWS of both males and females was split at the grand mean (= 51.6) in order to arrive at two levels of AWS. High AWS scored 51.6 or better while low AWS scored lower than 51.6. High AWS people were designated modern and low AWS people, traditional. Data on observers' AWS were included with data on actors' AWS in computing the grand mean so that the AWS dividing point was the same for both experiments.

Normative information. There were two levels of normative information, male and female. The male and the female normative information was exactly the same as in Experiment I; that is, for the male norm, males were said to have done better at the anagrams task and for the female norm, females were said to have done better.

The male and the female normative information conditions were chosen from among the four norm conditions used in Experiment I because they appeared to be the most likely to result in different predictions of success on the part of participants.

nAch. Experiment II was not designed to use nAch as

an independent variable. Data on participants' nAch were collected only to keep the procedures of Experiment I and Experiment II as similar as possible. The nAch data were nevertheless analyzed to see if in Experiment II viewpoint made any difference to the attribution of success for people high and low in nAch.

The Mehrabian Achievement Scale (Mehrabian & Banks, 1975) was used to assess level of nAch as in Experiment I. Males received the male form, females the female form. In order to establish a high nAch and a low nAch group, participants were split at the mean score. Men were split at the mean for men (= 9.0), and women were split at the mean for women (= 5.0). The data from participants in both Experiment I and Experiment II were used to compute these averages. The dividing points were the same for both experiments.

Task

Actors were asked to solve the anagrams. Observers were given a booklet of anagrams in which the solution to most of the anagrams had been written in by a participant in Experiment I. In order to ensure that most observers would receive a booklet with more anagrams solved than the observer had predicted he or she would be able to solve, only booklets with ten to fourteen anagrams solved were

used. The task for observers was to look over the work in the booklet.

Dependent Variables

Participants in both experiments were asked for the same nine responses used as dependent variables in Experiment I. The nine responses were: predicted score at anagrams and four attributions of success to ability, effort, task, and luck, measured both on a Likert scale and on a percentage scale.

Prediction. The first response variable was the score participants predicted they would, or could, make on the anagrams task. The prediction was made by participants after they had been identified as actors or observers and immediately after they read the normative information, but before they were given the anagrams.

Both actors and observers made a prediction. Actors were asked to predict the score they would make. The actors knew they would then take the test and would be able to compare their estimate with their performance. The observers knew they would not take the test but instead would examine another person's test results. The observers knew their estimate would not be compared with their own performance.

Attributions. Actors were asked to attribute their success at anagrams to four variables: ability, effort,

task, and luck. The meaning of each variable was explained with the same wording used in the Deaux and Farris experiment. Observers were asked to attribute the successful score at anagrams of the person whose work they had just seen. The four causes were the same as in the actor condition: ability, effort, task, and luck. They were given the same explanation of the meanings of the variables as the actors were given. Two measurement scales were used.

Likert scale: The first scale was a Likert scale. Participants were asked to judge each of the four explanations of success on a five-point linear scale. Each scale was labeled as follows: "Not a cause" was written under the left end of the scale, "Somewhat a cause" was written under the center of the scale, "Very much a cause" was written under the right end of the scale.

Percentage scale: The second method of judgement used the distribution of 100 percentage points between the four causes of success. Participants were asked to apportion the points among ability, effort, task, and luck. They were asked to make sure the answers added up to 100.

Participants

Participants were enrolled in psychology classes at Loyola University in 1978. All but seven of the participants in the actor condition were enrolled in introductory

psychology classes. The seven exceptions were enrolled in an advanced psychology class. Those who were in the observer condition were all students in introductory psychology classes.

Eleven observer participants were dropped from Experiment II based on their responses. Three participants (one male, two females) were dropped because they did not finish their AWS form. Eight (six males, two females) were dropped because the booklet they were given had fewer anagrams solved than the participants had predicted they themselves would solve. This was done to insure that all observers perceived the actors as having succeeded and is comparable to the dropping of participants in Experiment I whose performance fell below predictions. Dropping the 11 left a net of 57, which formed the sample analyzed.

Procedures

The procedure used with observers in Experiment II was as identical as possible to that used with actors in Experiment I.

All participants first took the nAch test. When everyone was finished, they received a sheet of instructions. The sheet received by the actor groups has been discussed in the method section of Experiment I. The actor instruction sheet told participants they would perform the

anagrams task and asked for a prediction of success. In the observer groups, the instruction sheet told participants that they would observe the work of someone in a previous group of freshmen (even though this was not necessarily true) who participated in the experiment. They were asked to evaluate how well they would do if they themselves took the test.

The instruction sheets also contained normative information. The actor information has been described in Experiment I. The observers received similar information. In the male norm condition, observers were told that for a previous group, "The overall average number of anagrams correctly solved by this group was 8, although males tend to do better." In the female norm condition, the word "males" read "females."

The observer instruction sheet asked the participants to look over the anagrams, to record the number of anagrams solved correctly, and to think ahout why the person was able to get the score he or she did. The observer instruction sheets for male and female norm conditions are included in Appendix B.

The anagram booklets were then passed out. Actors were asked to solve as many anagrams as possible. Observers were asked to look over booklets of other people. Booklets which went to the men had "John Doe" written on

the front. Booklets which went to the females had "Jane Doe." All participants were asked to record the number of correct anagrams.

Participants then received the final handout of the experiment. They were given seven sheets, stapled together, which had printed on them a description of the causes of success, the two types of attribution, and the AWS test. The sheets have been described in Experiment I. One change was necessary to make them meaningful to the observers: Reference to the scores on the anagrams task had to be in the third person, rather than in the second person.

In the actor condition, the experimenter explained: "I now want you to make a judgement of some of the reasons behind your performance. Please do the pages of this last section in order. When you have finished, bring everything to me." In the observer condition, the experimenter explained: "I now want you to make a judgement of some of the reasons behind the performance of the persons whose anagrams test you have just looked over. Please do the pages of this last section in order. When you have finished, bring everything to me."

The first two pages of the final section gave a rather extensive description of the four possible causes of success. Actors were instructed to use these causes in their judgement of their own performance. Observers were told to

consider the four variables in judging the "score made by the person whose anagrams test you have just examined." The description for observers is reported in Appendix B.

The next page contained the Likert attributions including the manipulation check for normative information described in Experiment I. The page after that contained the percentage attributions. The final three pages were the questions of the AWS scale. The last five pages were identical for both experiments and are reported in detail under the method section of Experiment I.

Participants were given a paperclip and asked to clip all their sections together when completed. When all the materials had been collected, the experimenter debriefed the participants. She explained to them that the normative information on the anagrams was incorrct. The average had been set low enough so most participants would do better. The purpose of the experiment was explained. Participants were encouraged to ask any questions they might have. The few that were asked were answered. Participants were then thanked for their cooperation and were dismissed.

Statistical Analyses

A series of t-tests were used to test the significance of differences stated in the hypotheses. Only differences equal to or less than .05 probability are reported as

significant.

A four-factor (Viewpoint, Sex, Norm, and AWS) multivariate analysis of variance was done on the predicted score and the four different attribution variables were measured both on the Likert and on the percentage scales.

A four-factor (Viewpoint, Sex, nAch and AWS) multivariate analysis of variance was done on the predicted score and the four different attribution variables were measured both on the Likert and on the percentage scales. This second analysis included nAch but omitted Norm, as more than four factors resulted in empty cells in the five-way interaction. Norm was omitted as it was viewed as the least important of the variables to consider along with nAch.

Significant interactions in the multivariate analysis of variance were then analyzed by a series of t-tests.

RESULTS

Overview

None of the hypothesized differences were significant. Traditional women actors did not attribute success to luck more than traditional women observers or modern women actors or men actors. Traditional women did not make a higher prediction of success in response to the female than to the male norm. Traditional women observers did not make a higher attribution to effort if they received the male norm than if they received the female norm.

There were three unexpected statistically significant effects for nAch: 1) attribution to ability on the percentage scale for nAch; 2) an interaction between nAch and AWS for predicted score; 3) a three-way interaction between Viewpoint, Sex and nAch for the three variables of predicted score, attribution of success to luck on the Likert scale and attribution of success to ability on the percentage scale.

The results of t-tests performed on hypothesized differences are presented first. Then the results of the multivariate analysis on the four factors of Viewpoint, Sex, Norm and AWS are given. The results of a multivariate analysis of Viewpoint, Sex, nAch and AWS are also reported.

Luck

Hypothesis I was not supported. Traditional women who were actors were hypothesized to attribute success to luck more than modern women. A series of t-tests ($t(73.24) = .33$, $p < .74$ for the Likert scale, and $t(57.69) = .05$, $p < .96$ for the percentage scale) showed traditional women were not significantly different from modern women in their attribution of success to luck, although their attribution to luck was higher than the seven other groups in this interaction. Actors tended to be higher than observers in their attribution to luck. The means and standard deviations for attribution to luck for Viewpoint, Sex, and AWS are reported in Table 10 for the Likert scale and in Table 11 for the percentage scale.

Predicted Score

Hypothesis II was not supported. Traditional women were hypothesized to make a higher predicted score if they received the female norm than if they received the male norm. There was no significant difference in predicted scores ($t(76.00) = .09$, $p < .93$) even though as expected traditional women with the female norm have the highest rating. Means and standard deviations for predicted scores for men and women, modern and traditional, who received the male or the female norm are reported in Table 12.

Effort

Hypothesis III was not supported. Traditional women observers had been hypothesized to make a higher attribution to effort if they received the male norm than if they received the female norm. The observed difference was in the opposite direction from what was hypothesized ($t(10.33) = -2.61$, $p < .03$). The means and standard deviations of attribution to effort for the factors of Viewpoint, Sex, Norm and AWS are reported in Table 13 for the Likert scale and in Table 14 for the percentage scale.

Viewpoint, Sex, Norm and AWS

The multivariate analysis using the factors of Viewpoint, Sex, Norm and AWS resulted in no significant main effects or interactions. The summary table of the analysis is presented in Table 34 in Appendix C. The means and standard deviations of all the response measures for the factors of Viewpoint, Sex, Norm and AWS are presented in Tables 44 through 48.

Viewpoint, Sex, nAch and AWS

The multivariate analysis of variance using the factors of Viewpoint, Sex, nAch and AWS was significant for one main effect and two interactions. A summary of this analysis is presented in Table 49. The means and standard deviations are presented in Tables 59 through 63 in Appendix C.

Table 10

Means and Standard Deviations for Attribution to Luck Measured on the Likert Scale for Actor and Observer Men and Women Modern and Traditional in AWS

	AWS	
Viewpoint	Modern	Traditional
	Men	
Actors	2.40	2.53
	(1.15)*	(1.02)
	n=18	n=44
Observers	2.10	2.35
	(.69)	(.82)
	n=11	n=17
	Women	
Actors	2.48	2.56
	(1.24)	(.95)
	n=59	n=30
Observers	2.25	2.08
	(1.02)	(.80)
	n=19	n=10

*Numbers in parentheses are standard deviations

Table 11

Means and Standard Deviations for Attribution to Luck Measured on the Percentage Scale for Actor and Observer Men and Women Modern and Traditional in AWS

	AWS	
Viewpoint	Modern	Traditional
	Men	
Actors	12.03 (16.35)* n=18	12.03 (8.37) n=44
Observers	12.90 (9.28) n=11	7.65 (4.83) n=17
	Women	
Actors	13.37 (13.18) n=59	13.53 (13.37) n=30
Observers	9.84 (9.05) n=19	11.80 (14.11) n=10

*Numbers in parentheses are standard deviations

Table 12

Means and Standard Deviations for Predicted Score for Men and Women, Modern and Traditional in AWS, for Male and Female Norm Conditions

	AWS	
Norm	Modern	Traditional
	Men	
Male	8.21 (1.62)* n=14	8.48 (1.88) n=31
Female	8.27 (1.98) n=15	8.10 (2.30) n=30
	Women	
Male	8.37 (2.25) n=41	8.19 (2.21) n=21
Female	8.32 (2.03) n=37	8.58 (1.71) n=19

*Numbers in parentheses are standard deviations

Table 13

Means and Standard Deviations for Effort Measured on the Likert Scale for the Factors of Viewpoint, Sex, Norm and AWS

Norm		AWS: Modern	AWS: Traditional
		Actors	
Male	Men	3.51(.76)* n=7	3.48(.94) n=24
	Women	2.86(1.12) n=29	3.29(1.21) n=15
Female	Men	3.02(1.14) n=11	3.27(.85) n=20
	Women	2.87(1.09) n=30	3.07(1.22) n=15
		Observers	
Male	Men	2.80(.84) n=7	2.90(1.52) n=7
	Women	2.85(.72) n=12	2.50(.78) n=6
Female	Men	4.13(1.03) n=4	3.21(.87) n=10
	Women	3.90(.91) n=7	3.23(.29 n=4

*Standard Deviations are given in the parentheses

Table 14

Means and Standard Deviations for Effort as Measured on the Percentage Scale for the Factors of Viewpoint, Sex, Norm and AWS

Norm		AWS: Modern	AWS: Traditional
Actors			
Male	Men	22.43(17.56)* n=7	25.21(14.86) n=24
	Women	21.24(15.01) n=29	20.93(13.05) n=15
Female	Men	19.09(13.92) n=11	20.83(10.31) n=20
	Women	19.53(12.90) n=30	21.00(14.90) n=15
Observers			
Male	Men	22.86(9.06) n=7	12.86(7.24) n=7
	Women	19.17(10.19) n=12	20.00(16.43) n=6
Female	Men	36.75(13.00) n=4	26.40(15.87) n=10
	Women	25.71(16.44) n=7	29.23(15.77) n=4

*Standard deviations are given in parentheses

There was a main effect for nAch ($F(8,185) = 2.07$, $p < .03$). Attribution to ability on the percentage scale was the only dependent variable significant for the main effect of nAch ($F(1,192) = 4.25$, $p < .04$). Participants high in nAch made a higher attribution to ability as measured on the percentage scale ($t = 29.86$, s.d. = 16.79) than did those low in nAch ($t = 25.68$, s.d. = 16.46).

The two-way interaction between nAch and AWS was significant ($F(8,185) = 3.51$, $p < .002$). Predicted score was the only variable reaching significance ($F(1,192) = 17.63$, $p < .0001$). The means and standard deviations for predicted score are presented in Table 15. Participants high in AWS and high in nAch predicted significantly higher scores than did participants high in nAch but low in AWS ($t(85.00) = -2.43$, $p < .02$). Participants who were modern (high in AWS) but low in nAch were very low in their prediction of success. They were significantly lower than modern high nAch participants ($t(75.18) = -4.16$) and lower than low nAch traditional participants ($t(85.63) = 2.87$, $p < .005$).

There was also a significant interaction for Viewpoint, Sex and nAch ($F(8,185) = 3.23$ $p < .001$). Three of the nine dependent variables were significant for this interaction: luck on the Likert scale ($F(1,192) = 9.76$, $p < .002$), ability on the percentage scale ($F(1,192) = 8.75$, $p < .004$), and predicted score ($F(1,192) = 5.19$, $p < .020$).

Table 15

Means and Standard Deviations for Predicted Score for the Factors of nAch and AWS

	AWS	
nAch	Modern	Traditional
High	8.97 (1.68)* n=64	8.06 (2.12) n=47
Low	7.35 (2.15) n=43	8.56 (1.94) n=54

*Standard deviations are given in the parentheses

Each of these dependent variables is considered in turn.

Luck. Males and females were different in their attributions to luck. Means and standard deviations for luck on the Likert scale for the interaction of Viewpoint, Sex and nAch are presented in Table 16. Female actors high in nAch were not significantly different in their attributions to luck than female actors low in nAch. On the other hand, male actors high in nAch made low attributions to luck and male actors low in nAch made high attributions to luck. This difference was significant ($t(50.36) = 2.18$, $p < .03$).

Male observers low in nAch made significantly lower attributions to luck than male actors low in nAch ($t(36.61) = 3.22$, $p < .003$). High nAch male observers were higher in their attribution to luck than low nAch observers ($t(25.80) = 2.18$, $p < .02$). Female observers high in nAch did not differ significantly from female observers low in nAch.

Ability. Male and female observers were similar in their attribution to ability on the percentage scale. Those high in nAch assigned a greater percentage to ability than did those low in nAch. This difference was significant for females ($t(84.64) = -2.01$, $p < .05$) but was not significant for males. High nAch male observers made a higher attribution to ability than did low nAch male observers ($t(21.36) = -2.23$, $p < .04$). On the other hand, high nAch female observers made a lower attribution to ability than did low

Table 16

Means and Standard Deviations for Luck Measured on the Likert Scale for Factors of Viewpoint, Sex, and nAch

	Viewpoint	
nAch	Actor	Observer
	Men	
High	2.23 (.90)* n=34	2.57 (.72) n=15
Low	2.81 (1.15) n=28	1.88 (.68) n=13
	Women	
High	2.61 (1.24) n=48	1.99 (.92) n=14
Low	2.39 (1.02) n=41	2.38 (.95) n=15

*Standard deviations are given in the parentheses

nAch female observers ($t(24.73) = 2.64$, $p < .01$). The difference between males and females in the observer condition was also significant. For observers high in nAch, males were higher than females ($t(21.74) = 2.24$, $p < .04$). For observers low in nAch, males were lower than females ($t(24.11) = -2.63$, $p < .02$). Means and standard deviations of the interaction are presented in Table 17.

Predicted score. The predicted score was also affected by viewpoint. Women observers high in nAch make a high prediction of scores, and women observers low in nAch make low predictions of scores ($t(26.92) = -2.78$, $p < .01$). Furthermore, the women observers high in nAch make higher predictions than women actors high in nAch ($t(26.13) = -2.47$, $p < .02$). No other viewpoint differences were observed. With actors, there were no significant differences between men and women in predicted scores regardless of whether the participants were high or low in nAch. Means and standard deviations for this interaction are presented in Table 18.

Table 17

Means and Standard Deviations for Ability Measured on the Percentage Scale for the Factors of Viewpoint, Sex and nAch

	Viewpoint	
nAch	Actor	Observer
	Men	
High	30.03 (15.31)* n=34	31.73 (21.19) n=15
Low	26.21 (17.51) n=28	17.85 (10.75) n=13
	Women	
High	32.71 (16.50) n=48	17.71 (11.36) n=14
Low	25.61 (16.63) n=41	31.67 (16.76) n=15

*Standard deviations are given in the parentheses

Table 18

Means and Standard Deviations for Predicted Score for the Factors of Viewpoint, Sex and nAch

nAch	Viewpoint: Actor	Viewpoint: Observer
	Men	
High	8.65 (1.98)* n=34	8.47 (1.60) n=15
Low	7.71 (1.90) n=28	8.31 (2.46) n=13
	Women	
High	8.29 (2.01) n=48	9.57 (1.60) n=14
Low	8.22 (2.26) n=41	7.80 (1.82) n=15

*Standard deviations are given in the parentheses

CHAPTER IV

DISCUSSION

Evaluation of Hypotheses

All the hypotheses examined in the experiments discussed in the dissertation dealt with attitudes towards women's role. An attempt was made to classify differences in certain responses of men and women based on these attitudes. Participants were also tested for need achievement (nAch) to investigate if and how this factor might interact with the attitude towards women's role (AWS).

The responses examined were: prediction of the number of correct solutions on an anagrams task and attribution of success after the task was completed. An attempt was made to modify the responses by means of sex-oriented norm information.

A subordinate part of the study tested for differences caused by participants' viewpoint. In the primary experiment, Experiment I, participants predicted their own scores and attributed their own successes to several factors. In this experiment the participants were "actors." In Experiment II, on the other hand, participants were "observers" who knew they would not have to perform the task. They predicted the scores they could receive if tested and at-

tributed successes they observed others had achieved.

It had been expected that women participants would differentiate themselves according to their attitudes toward women's role. This attitude would affect both their prediction as to how well they expected to do at the task and their attributions of success.

Women with traditional attitudes given male norms (a statement that men do better than women at the task) were expected to predict lower scores than traditional women given female norms (women do better than men). Viewpoint was not expected to make any difference (Hypothesis II in Experiment I for actors was the same as Hypothesis III in Experiment II for observers).

No significant differences in predicted scores were found for traditional women based on normative information. Additionally, normative information did not result in significantly different predictions for other categories of participants, i.e., modern women and all men.

It had also been expected that women's attribution of success to various factors, ability, effort, task, and luck, would be strongly affected by their attitudes towards women's role. One hypothesis is that traditional women actors would be more likely to attribute success to luck more than would modern women actors and more than traditional women observers (Hypothesis I in both Experiment I and Ex-

periment II). This hypothesis also was not supported. No significant differences were observed among categories of participants.

To test the possibility that traditional women consider difficulty as being significant in the success of others, but not in their own success, it was hypothesized that traditional women observers would make a higher attribution to effort when they received the male norm than when they received the female norm (Hypothesis II in Experiment II). This hypothesis was not supported. There was no significant difference based on normative information.

Finally, it was expected that modern women and both modern and traditional men would attribute their own success to effort and ability more if they were high in nAch than if they were low in nAch (Hypothesis III and IV in Experiment I). Only in the attribution to ability were any significant differences encountered. Attribution to effort was not significantly different among participants.

The only hypothesis supported in the experiments was Hypothesis IV of Experiment I. This hypothesis related to attribution of success to ability. However, the results were not as simple as hypothesized. Modern women and traditional men, as hypothesized, made a higher attribution to ability if they were high in nAch than if they were low in nAch. Modern men did not show this difference, although

they had been hypothesized to do so.

Other Results of Interest

Other statistically important results, not relating directly to the hypotheses, were found from an analysis of the data. 1) There was a two-way interaction between nAch and attitude towards women's role in predicted score only in Experiment II. The interaction has been described in the Results section of Experiment II. 2) Participants high in nAch attributed success to ability on the percentage scale (but not on the Likert scale) in both Experiments I and II. 3) There was a three-way interaction between Viewpoint, Sex and nAch on three dependent variables: predicted scores, attribution to luck (measured on the Likert scale) and attribution to ability (measured on the percentage scale). This interaction is complex and has been discussed in the Results section of Experiment II.

Examination of the Results

Reasons why no support was found for any hypotheses except number IV in Experiment I will be discussed in this section. Possible explanations for the unexpected effects of nAch alone and nAch in combination with AWS and with Viewpoint and Sex will be considered. Implications for further research will be suggested in the last section.

AWS

Attitude towards women's role was measured by AWS (Spence, Helmreich, & Stapp, 1973). In only one instance, attribution of success to ability between high and low nAch (Hypothesis IV in Experiment I), did the scale discriminate behavioral differences.

This almost total lack of effect for AWS may be because women do not differ in their attribution of success due to a modern or traditional outlook on their role. However, it is also worth considering that the AWS scale may not be a valid measurement of the variables affecting attribution of success and prediction of success. Since the scale was developed, college students and particularly college women have become very concerned about careers after college. Many more career opportunities have opened up for them. In addition, the women's movement on campuses has taken the form of women's centers where women examine their traditional roles and possible new roles.

The women's movement on campus does appear to have an effect upon women's attitudes. A study done by Rublem Croke, Frieze, and Parsons (1975) found that, after taking a women's study course, women were less interested in the traditional maternal role and more aware of sex discrimination than they had been before they took the course than a control group of women who did not take the course.

The women's movement may account for why women in the Deaux and Farris experiment attributed success to luck more than men did, while in the present two experiments this difference was not observed. In the intervening years, women, at least college women, may have come to believe that they must be responsible for their own success and must not think that success comes through luck. One objective of the women's movement on campus is to teach women that it is all right to seek what they want. In assertiveness training sessions, women are taught ways to achieve success directly.

All of this focus on change in women's attitudes about achievement may have resulted in some change in their attitudes about women's role between the time the AWS was constructed and the present. In spite of this trend, there were no significant differences between the average score of men or the average score of women in the original normative sample, taken in 1973, and the scores of participants in these experiments in 1978.

There is always the possibility that either the focus on women's achievement on campus has had little effect on students, or that the original sample tested by the AWS was particularly "modern" in their views as to women's role. It seems more logical that the AWS does not measure attitudes about women's roles which relate to attitudes about achievement, although this cannot be stated conclusively.

nAch, AWS and Sex

The relationship between nAch and AWS had been hypothesized to be significant for women. Modern women, but not traditional women, were hypothesized to be affected in their attribution of success by their level of nAch. The relationship between nAch and AWS had not been hypothesized to be important for men.

The results of Experiments I and II show that the relationship between nAch and AWS may be more complex than had originally been supposed. The hypothesized patterns were not found. Men as well as women were affected by the relationship of level of AWS and level of nAch in both attribution of success and in predicted score. Unfortunately, this relationship did not follow a consistent pattern leading to any logical explanation for the relationship.

In Experiment I, traditional men and modern women attributed success to ability to a greater degree when they were high than when they were low in nAch. Modern men and traditional women did not. This finding could reflect self-confidence on the part of traditional men and modern women high in nAch. If this explanation is valid, several intriguing questions arise. For example, is the self-confidence of traditional men the same as the self-confidence of modern women; why do modern men and traditional women not have such self-confidence; and is their lack of self-confi-

dence at all related to their deviance in their AWS scores as compared to the majority of their own sex (fewer of the men were traditional and fewer of the women were traditional)?

It is perplexing that nAch had a significant effect on attribution of success to ability but not to effort. Weiner (1974) states that attribution to effort is the more important of these two variables in distinguishing people high and low in nAch. In the experiments by Kukla (1972) which support this idea, Kukla used a more complex task than anagrams. People may not have attributed success to effort at the anagrams task, thinking that the ease of the task and their skill at anagrams was more important than effort to their solution. There was not much opportunity for differential effort here. In both Experiment I and Experiment II, task and ability attributions appear to be relatively high. A more complex task might have resulted in effort being significant for level of nAch. Unfortunately, there is no information on the effect of task complexity on attribution of success.

In Experiment II, predicted scores significantly higher than the average predictions were made by those participants who exhibited both high nAch and high AWS. This was true for both males and females, i.e., both modern men and modern women high in nAch predicted high scores. The

results in Experiment I were in the same direction, but the differences in that case were not statistically significant. For some reason, the expression of self-confidence in predicting scores does not follow the same nAch/AWS patterns as self-confidence expressed in attributions of success to ability.

Here again, the AWS test itself may be the root of the disparities found. That is, the AWS scale may not be valid for meaningful attitudes which affect achievement behavior. On the other hand, differences in attributions and predicted score due to nAch and AWS could be due to real differences between men and women. These differences also could be due to the fact that different measuring instruments for nAch are used for men and women. Perhaps the relationship between what was measured on the male nAch scale and the AWS scale differed from the relationship for females.

Viewpoint, Sex, and nAch

Viewpoint appears to be an important variable to consider in studying nAch and sex interactions. The actor/observer distinction made a significant difference in three of the nine dependent variable responses. Viewpoint is not a dimension which has been considered in the literature on research on nAch and attribution of success.

Weiner's (1974) attribution theory is supported in these experiments by the responses of male participants with respect to attribution of success to ability using the percentage scale, but the response of women participants were in agreement with Weiner only in the actor condition. Furthermore, no significant differences were observed in attribution to ability on the Likert scale. Men high in nAch tend to ascribe their success to their ability more than men low in nAch. Men do not change their attributions to ability when they shift from judging their own success to judging another person's work. Men, then, appear to be quite consistent in their differences in attribution to ability based on level of nAch.

Women do not show consistency in their belief in their ability. When women are actors, they, like men, attribute success more to ability if they are high in nAch but less if they are low in nAch. But when they observe someone else's success, they attribute the success to ability more if they are low in nAch than if they are high in nAch. This reverses the pattern found in men.

Whereas only women observers behaved in a different manner from the rest of the sex/viewpoint group with respect to attribution of success to ability, this pattern was not found with respect to two other dependent variables: prediction of success and attribution of success to

luck.

First, with respect to predicted scores, male actors high in nAch predicted higher scores than those low in nAch. Male observers showed no significant differences in response regardless of nAch levels. Women, on the other hand, reversed this viewpoint order: Female actors exhibited no significant differences, but female observers showed the same nAch difference as male actors.

Second, with respect to attribution to luck, significant differences were found only with the Likert scale. The percent scale attribution showed no significant relationship between nAch and attribution to luck. With the Likert scale the male actor/female observer and male observer/female actor groupings were the same as observed in the case of predicted scores. Male actors and female observers with high nAch attributed success to luck less than those with low nAch. This difference was significant for males. On the other hand, male observers and female actors high in nAch attributed to luck more than those low in nAch. The difference is significant for males but not females. For reference, it should be recalled that Weiner found no difference, based on nAch, in attribution to luck.

Differences in attribution of success to ability based on nAch were observed only when the attributions were made on the percentage scale, not on the Likert scale. This

could have resulted from the percentage scale's restriction that all four attributions must add up to 100, a restriction not placed on the Likert scale. Another possible reason is that the percentage scale appeared after the Likert scale. This could result in an answer on the percentage scale reflecting reconsideration of the original Likert attribution. It could be that people high in nAch, when reconsidering their success, increase their self-confidence as compared to people low in nAch. The relationship between the two scales is not clear. There was no significant difference in the number of significant attributions on one scale as compared with the other scale. There also did not seem to be a pattern in which a particular variable was significant on a particular scale. Furthermore, if a variable was significant on one scale, it often was not significant on the other scale.

Suggested Research

Many differences were tested in these two experiments. By chance alone, some of them would be expected to be significant. Because of the many differences tested, the probability would be more than .05. Thus, any results must be viewed in this light and replicated in another experiment if possible. Beyond replication, the results presented in this dissertation suggest at least four areas

which need further research.

Reassessment of attribution. There is no reported research on reassessment of attribution. The use of sequential responses on the Likert and percentage scales represent reassessment in the experiments reported here. However, the results may have been confounded because different response scales were used. An experiment or series of experiments should explore this area further. For example, it would be useful to know whether people high and low in nAch maintain their attribution difference when asked to reattribute their success. This could have been done in these experiments by randomly placing the Likert scale first in one-half of the test books and the percentage scale first in the remaining one-half of the books. Analysis of the results from such an experiment would permit separating the effects of position from the effect of scale type. If attributions are not stable, this might have consequences for Weiner's theory, which does not concern itself with the question of stability.

Type of task

The effect of type of task upon attribution should also be tested. In Kukla's (1972) series of experiments in which nAch differences were found, the task used was different from the task used in the experiments reported in

the experiments reported in this dissertation. The Kukla task, requiring participants to extend a series of random digits, may have appeared to participants to be more ambiguous, more novel, or more complex than the anagrams task appeared to participants in Experiments I and II. Any one of these differences might result in attributional differences.

AWS & nAch

The two experiments reported in this dissertation investigated to find sex differences in attribution due to level of nAch and attitude towards women's role. These two factors were treated as separate entities whereas they may be two embodiments of the same idea. A research strategy which treated them as a single variable should be used in further research.

One such combined test is already available, and another test is being developed. Use of either one of these measures might be more successful in finding sex differences in attribution of success than were found in Experiments I and II. Spence and Helmreich (1978) have developed a new scale which incorporates women's traditional concerns and men's achievement issues. The second test, still in the development stage by Leavitt and Lipman-Blumen (Note 3), incorporates McClelland's concept of nAch and also includes

the concept of vicarious achievement. Women may be as interested in achievement as men, but not as directly. They may seek achievement through the work of others, such as their husband and children.

Viewpoint differences

Viewpoint differences in attribution of success for men and women high and low in nAch should also be researched more extensively. Experiment II involved only a small sample of students. The results need to be replicated with a different and larger sample, as well as with different tasks. For instance, Sorrentino and Short (1977) have suggested that nAch differences in attribution are found primarily in high school students. It would be interesting to see if this younger group of students showed the same actor-observer differences due to sex and nAch level as was found with college students. Older people who have self-selected themselves into either achievement-oriented or nonachievement-oriented careers also should be investigated for viewpoint differences in nAch due to sex. For men, those who were labeled as achievement-oriented might be men who run their own business; those who are not achievement-oriented might be school teachers. For women, those who select a career in business might be considered, as were the men, achievement-oriented, and those who were

housewives might not.

Conclusion

The starting point for this research was a concern with women's motive to achieve: Were there differences in women's achievement behavior as compared to men's achievement behavior, and was this difference related to women's beliefs as to women's role? The research reported in this dissertation has neither completely refuted any of these differences nor has it supported them. Women do appear to have some differences with men in their achievement behavior, specifically when viewpoint is considered. Women did not in this research show differences in achievement behavior due to attitude towards women's role, although this may be due either to the type of women (college students) tested or to the measuring instrument used. Thus this research is only a small contribution to an ongoing research into achievement behavior of men and women.

SUMMARY

A survey of the literature on need for achievement pointed up inconsistent experimental results with women which were not obtained with men. Some research indicated these differences might be due to women's beliefs about women's role. Women who are traditional in their beliefs about women's role think achievement is more appropriate for men than for women. Women who are modern in their beliefs think achievement is as appropriate for women as for men.

Participants were classified as to their need for achievement (nAch) and their attitude towards women's role (AWS). They were also given sex-oriented normative information. Traditional women were expected to be affected by this gender linkage. Men and modern women were not.

The responses examined were prediction of scores at an anagrams task and luck after the task was completed. The task was anagrams.

There were four hypotheses for Experiment I. First, traditional women attribute success to luck more than modern women or men. Second, traditional women are affected by normative information when they predict performance in the following way: a. Traditional women who receive the male

norm, i.e., they are told males do better, make the lowest prediction of the traditional women. b. Traditional women who receive the female norm, i.e., they are told females do better, make the highest prediction of the traditional women. Third, men and modern women attribute success to ability more if they are high than if they are low in nAch. Fourth, men and modern women attribute success to effort more if they are high than if they are low in nAch.

Experiment II tested whether Viewpoint differences, i.e., actor or observer, made a difference in traditional women's attribution of achievement. The following three hypotheses were tested in Experiment II. First, as actors, traditional women attribute success to luck more than modern women, but not when they are observers. Second, as observers, traditional women make a higher attribution to effort if they receive the male norm than if they receive the female norm. Third, traditional women, irrespective of their viewpoint, predict they will be less successful at their task when they receive the male norm than when they receive the female norm.

Only Hypothesis three of Experiment I was supported for modern women. Men were affected by AWS in their attribution to ability. Traditional men high in nAch attribute success to ability more than traditional women low in nAch. This difference was not observed in modern men.

There were several unexpected results. In both experiments nAch was significant. People high in nAch attributed success to ability more than people low in nAch. In Experiment II, modern people high in nAch made significantly higher prediction as to their score than modern people low in nAch. Viewpoint interacted with nAch and Sex for the responses of predicted score, attribution to ability and to luck. The relationships are complex for these variables.

The almost total lack of effect due to AWS was perhaps due to the validity of the AWS test and to the effect of the women's movement on achievement attitudes. The relationship of AWS and nAch appears to be complex. Viewpoint should be considered in studying sex differences in nAch. Several suggestions were made for further study.

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APPENDIX A

The Mehrabian Scale
(for Men)

The following questionnaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as, "I'd rather go swimming than go bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)," this indicates that you prefer (A) much more than (B). If you give strong disagreement to that statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

+4 = very strong agreement
+3 = strong agreement
+2 = moderate agreement
+1 = slight agreement
0 = neither agreement nor disagreement
-1 = slight disagreement
-2 = moderate disagreement
-3 = strong disagreement
-4 = very strong disagreement

1. I worry more about getting a bad grade than I think about getting a good grade. (____)

2. I would rather work on a task where I alone am responsible for the final product than one in which many people contribute to the final product. (____)

3. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. (____)

4. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. (____)

5. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. (____)

6. I would rather have a job in which my role is clearly

me and my rewards are average. (____)

7. I would prefer a well-written informative book to a good movie. (____)

8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult. (____)

9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. (____)

10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers. (____)

11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. (____)

12. If I am going to play cards I would rather play a fun game than a difficult thought game. (____)

13. I prefer competitive situations in which I have superior ability to those in which everyone invoved is about equal in ability. (____)

14. I think more of the future than of the present and past. (____)

15. I am more unhappy about doing something badly than I am happy about doing something well. (____)

16. In my spare time I would rather learn a game to develop skill than for recreation. (____)

17. I would rather run my own business and face a 50 per cent chance of bankruptcy than work for another firm. (____)

18. I would rather take a job in which the starting salary is $10,000 and could stay that way for some time than a job in which the starting salary is $5,000 and there is a guarantee that within five years I will be earning more than $10,000. (____)

19. I would rather play in a team game than compete with just one other person. (____)

20. The thing that is most important for me about learning to play the guitar is being able to play a musical instrument very well, rather than learning it to have a better time with my friends. (____)

21. I prefer multiple choice questions on exams to essay questions. (____)

22. I would rather work on commission which is somewhat risky but where I would have the possibility of making more than working on a fixed salary. (____)

23. I think that I hate losing more than I love winning. (____)

24. I would rather wait one or two years and have my parents buy me one great gift than have them buy me several average gifts over the same period of time. (____)

25. If I were able to return to one or two incomplete tasks, I would rather return to the difficult than the easy one. (____)

26. I think more about my past accomplishments than about my future goals. (____)

The Mehrabian Scale
(for Women)

Part 1

The following questionnaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as, "I'd rather go swimming than go bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)," this indicates that you prefer (A) much more than (B). If you give strong disagreement to that same statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

+4 = very strong agreement
+3 = strong agreement
+2 = moderate agreement
+1 = slight agreement
0 = neither agreement nor disagreement
-1 = slight disagreement
-2 = moderate disagreement
-3 = strong disagreement
-4 = very strong disagreement

1. I think more about getting a good grade than I worry about getting a bad grade. (____)

2. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. (____)

3. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. (____)

4. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. (____)

5. I would rather have a job in which my role is clearly

defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average. (____)

6. My strongest feelings are aroused more by fear of failure than by hope of success. (____)

7. I would prefer a well-written informative book to a good movie.

8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult.

9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. (____)

10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers. (____)

11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. (____)

12. If I am going to play cards I would rather play a fun game than a difficult game. (____)

13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability. (____)

14. I think more of the future than of the present and past. (____)

15. I am more unhappy about doing something badly than I am about doing something well. (____)

16. I worry more about whether people will praise my work than I do about whether they will criticize it. (____)

17. If I had to spend the money myself I would rather have an exceptional meal out than spend less and prepare an exceptional meal at home. (____)

18. I would rather do a paper on my own than take a test. (____)

19. I would rather share in the decision-making process of

a group than take total responsibility for directing the group's activities. (____)

20. I would rather try to make new and interesting meals that may turn out badly than make more familiar meals that frequently turn out well. (____)

21. I would rather do something I enjoy than do something that I think is worthwhile but not much fun. (____)

22. I would rather try to get two or three things done quickly than spend all my time working on one project. (____)

23. If I am ill and must stay home, I use the time to relax and recuperate rather than try to read or work. (____)

24. If I were rooming with a number of girls and we decided to have a party, I would rather organize the party myself than have one of the others organize it. (____)

25. I would rather cook for a couple of gourmet eaters than for a couple who simply have huge appetites. (____)

26. I would rather that our women's group be allowed to help organize city projects than be allowed to work on the projects after they have been organized. (____)

Male Norm Manipulation

We are trying to discover in this experiment why people do well or poorly in unscrambling anagrams into coherent words. You will be given a series of 15 anagrams, one at a time, and will be allowed only a certain amount of time to solve each anagram by rearranging the letters to form a meaningful word. Your time for each anagram is limited. The experimenter will tell you when to stop and go on to the next one.

When this test was given previously, the average number solved for that group of students was 8, although males typically did better. Please record what your own sex is and also estimate what you think your own performance on the anagrams will be. Write down an estimate of the number of anagrams you think you will solve.

Your sex: _____

Estimate of number you will solve: _____

Now look up for further directions.

Female Norm Manipulation

We are trying to discover in this experiment why people do well or poorly in unscrambling anagrams into coherent words. You will be given a series of 15 anagrams, one at a time, and will be allowed only a certain amount of time to solve each anagram by rearranging the letters to form a meaningful word. Your time for each anagram is limited. The experimenter will tell you when to stop and go on to the next one.

When this test was given previously, the average number solved for that group of students was 8, although females typically did better. Please record what your own sex is and also estimate what you think your own performance on the anagrams will be. Write down an estimate of the number of anagrams you think you will solve.

Your sex: _____

Estimate of the number you will solve: _____

Now look up for further directions.

Male-Female Norm Manipulation

We are trying to discover in this experiment why people do well or poorly in unscrambling anagrams into coherent words. You will be given a series of 15 anagrams, one at a time, and will be allowed only a certain amount of time to solve each anagram by rearranging the letters to form a meaningful word. Your time for each anagram is limited. The experimenter will tell you when to stop and go on to the next one.

When this test was given previously, the average number solved for that group of males and females was 8. Please record what your own sex is and also estimate what you think your own performance on the anagrams will be. Write down an estimate of the number of anagrams you think you will solve.

Your sex: _____

Estimate of the number you will solve: _____

Now look up for further directions.

Neutral Norm Manipulation

We are trying to discover in this experiment why people do well or poorly in unscrambling anagrams into coherent words. You will be given a series of 15 anagrams, one at a time, and will be allowed only a certain amount of time to solve each anagram by rearranging the letters to form a meaningful word. Your time on each anagram is limited. The experimenter will tell you when to stop and go on to the next one.

When this test was given previously, the average number solved for that group of students was 8. Please estimate what you think your own performance as a student will be. Write down an estimate of the number of anagrams you think you will solve.

Estimate: _____

Now look up for further directions.

Attribution Instructions

How a person does a task like the anagrams one you just completed depends upon a number of factors.

On some occasions, the task is an easy one. Even people who are not very skillful, or who don't try hard, are successful. On harder tasks these people might not do so well.

Other people are successful because they are just lucky enough to get the right combination of letters in the time allowed. They happen to hit upon the right combination of letters largely by chance. They therefore do well, even if they are not particularly skillful or don't try too hard. Given another set of similar anagrams, or even an easier set, they might not do so well.

Some people succeed mainly because they apply themselves to the task and try hard. In this way they are sometimes able to make up for any lack of skill or for bad luck. Even if the task is difficult, such people may do well. Were they to lose interest and not try so hard, they would probably not do so well.

Some other people succeed because they have skill and

ability. These people don't really have to try very hard, even on fairly difficult tasks. And good luck isn't really involved for these people. Given another set of anagrams, or even a harder set, they probably would do just as well because they have the ability.

Consider the score you made on the Anagrams Test. In your case to what extent do you consider that your score was due to the following things: the fact that the task was easy; the fact that the person tried hard; the fact that the person was lucky; the fact that the person has ability at solving anagrams.

On the following page put an X on each of the lines to indicate your answer to each of these possibilities. Feel free to put a cross on any part of the lines.

Turn to the next page and mark your answers.

Likert Scale Attribution
and Norm Manipulation Check

SKILL AND ABILITY

I——————I——————I——————I——————I

not a cause | somewhat a cause | very much a cause

GOOD LUCK

I——————I——————I——————I——————I

not a cause | somewhat a cause | very much a cause

TRIED HARD

I——————I——————I——————I——————I

not a cause | somewhat a cause | very much a cause

EASY TASK

I——————I——————I——————I——————I

not a cause | somewhat a cause | very much a cause

In previous experiments, who has done better at anagrams?

I——————I——————I——————I——————I

males do better | equal | females do better

Percentage Scale Attribution

You have just been asked to describe how the four explanations (effort, task, luck and ability) contribute towards how well you did on the anagrams. Would you please decide again how much each of these contributed to your result. But this time, you are to decide on a percentage basis: what percent was due to luck, what percent to effort, and what percent to your own ability, and what percent to how easy the task was. Think about the percent each explanation contributed to your performance with the anagrams, and write this down next to the appropriate word. Be sure your four percentages add up to 100 - no more, no less.

_____% task (task was easy)

_____% skill (ability at anagrams)

_____% effort (worked hard and concentrated)

_____% luck (just lucked out)

_____ total must add up to 100

Attitudes Toward Women Scale

The statements listed below describe attitudes toward the role of women in society which different people have. There are no right or wrong answers, only opinions. You are asked to express your feelings about each statement by indicating whether you (A) Agree strongly, (B) Agree mildly, (C) Disagree mildly, or (D) Disagree strongly. Please indicate your opinion by marking the column on the answer sheet which corresponds to the alternative which best describes your personal attitude.

	Agree Strongly	Agree Mildly	Disagree Mildly	Disagree Strongly
1. Swearing and obscenity are more repulsive in the speech of a woman than a man.	A	B	C	D
2. Women should take increasing responsibility for leadership in solving the intellectual and social problems of the day.	A	B	C	D
3. Both husband and wife should be allowed the same grounds for divorce.	A	B	C	D
4. Telling dirty jokes should be almost a masculine prerogative.	A	B	C	D
5. Intoxication among women is worse than intoxication among men.	A	B	C	D
6. Under modern economic conditions with women being active outside the home, men should share in household tasks such as washing dishes and doing the laundry.	A	B	C	D
7. It is insulting to women to have the "obey" clause remain	A	B	C	D

in the marriage service.

8. There should be a strict merit system in job appointment and promotion without regard to sex.	A	B	C	D
9. A woman should be as free as a man to propose marriage.	A	B	C	D
10. Women should worry less about their rights and more about becoming good wives and mothers.	A	B	C	D
11. Women earning as much as their dates should bear equally the expense when they go out together.	A	B	C	D
12. Women should assume their rightful place in business and all the professions along with men.	A	B	C	D
13. A woman should not expect to go to exactly the same places or to have quite the same freedom of action as a man.	A	B	C	D
14. Sons in a family should be given more encouragement to go to college than daughters.	A	B	C	D
15. It is ridiculous for a woman to run a locomotive and for a man to darn socks.	A	B	C	D
16. In general, the father should have greater authority than the mother in the bringing up of children.	A	B	C	D
17. Women should be encouraged not to become sexually intimate with anyone before marriage, even their fiances.	A	B	C	D
18. The husband should not be favored by law over the wife in the disposal of family property or income.	A	B	C	D

19. Women should be concerned with their duties of childbearing and housetending, rather than with desires for professional and business careers.	A	B	C	D
20. The intellectual leadership of a community should be largely in the hands of men.	A	B	C	D
21. Economic and social freedom is worth far more to women than acceptance of the ideal of feminity which has been set by men.	A	B	C	D
22. On the average, women should be regarded as less capable of contribution to economic production than are men.	A	B	C	D
23. There are many jobs in which men should be given preference over women in being hired or promoted.	A	B	C	D
24. Women should be given equal opportunity with men for apprenticeship in the various trades.	A	B	C	D
25. The modern girl is entitled to the same freedom from regulation and control that is given to the modern boy.	A	B	C	D

APPENDIX B

Male Norm Manipulation

We are trying to discover in this experiment why people do well or poorly at unscrambling anagrams into coherent words. A previous group of Loyola freshmen worked a series of 15 anagrams. The overall average number of anagrams corectly solved by this group was 8, although males tended to do better. If you yourself took this test, how well do you think you would do? Please record your estimate of the number you think you could correctly solve.

Estimate _____

Your sex _____

You will be given a book worked by someone in the previous group of freshmen mentioned above. You are to look them over, record how many she got right, and make your own judgement about why she was able to get the score she did. Look over the anagrams for a few minutes, record the information asked for at the end of this sheet, think about the person's performance, and then wait for further instructions.

Number solved correctly _____

Book identification number _____

Female Norm Manipulation

We are trying to discover in this experiment why people do well or poorly at unscrambling anagrams into coherent words. A previous group of Loyola freshmen worked a series of 15 anagrams. The overall average number of anagrams correctly solved by this group was 8, although females tended to do better. If you yourself took this test, how well do you think you would do? Please record your estimate of the number you think you could correctly solve.

Estimate _____

Your sex _____

You will be given a book of anagrams worked by someone in the previous group of freshmen mentioned above. You are to look them over, record how many he got right and make your own judgement about why he was able to get the score he did. Look over the anagrams for a few minutes, record the information asked for at the end of this sheet, think ahout the person's performance and then wait for further instructions.

Number solved correctly _____

Book identification number _____

Attribution Instructions

How a person does on a task like anagrams depends upon a number of factors.

On some occasions, the task is an easy one. Even people who are not very skillful, or who don't try hard, are successful. On harder tasks these people might not do so well.

Other people are successful because they are just lucky enough to get the right combination of letters in the time allowed. They happen to hit upon the right combination of letters largely by chance. They therefore do well, even if they are not particularly skillful or don't try too hard. Given another set of similar anagrams, or even an easier set, they might not do so well.

Some people succeed mainly because they apply themselves to the task and try hard. In this way they are sometimes able to make up for any lack of skill or for bad luck. Even if the task is difficult, such people may do well. Were they to lose interest and not try so hard, they would probably not do so well.

Some other people succeed because they have skill and

ability. These people don't really have to try very hard, even on fairly difficult tasks. And good luck isn't really involved for these people. Given another set of anagrams, or even a harder set, they probably would do just as well because they have the ability.

Consider the score made by the person whose anagrams test you have just examined. To what extent do you think the score was due to the following things: the fact that the task was easy; the fact that the person tried hard; the fact that the person was lucky; the fact that the person has ability at solving anagrams.

On the following page put an X on <u>each</u> of the lines to indicate your answer to each of these possibilities. Feel free to put a cross on any part of the lines.

Turn to the next page and mark your answers.

APPENDIX C

Table 19

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for Predicted Score, Ability, Effort, Task and Luck Judged on the Likert Scale and Ability, Effort and Luck Measured Judged on a Percentage Scale

Source	df	F
Sex (A)	8,266.00	1.01
Norm (B)	24,772.08	.85
nAch (C)	8.266.00	2.11*
AWS (D)	8,266.08	1.17
A x B	24,772.08	.76
A x C	8,266.08	1.65
A x D	8,266.00	.66
B x C	24,772.08	.94
B x D	24,772.08	.67
C x D	8,266.00	2.01
A x B x C	24,772.08	.57
A x B x D	24,772.08	.94
A x C x D	8,266.00	.66
B x C x D	24,772.08	1.13
A x B x C x D	24,772.08	.62

Note: Information on all the dependent variables was summarized in a matrix. No MS or SS information was given by the computer program.

The degrees of freedom are for the numerator and the denominator of the F ratio.

* $p < .05$

Table 20

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Ability Measured on the Likert Scale

Source	MS	df	F
Sex (A)	.75	1	.23
Norm (B)	.11	3	.66
nAch (C)	3.24	1	.29
AWS (D)	4.98	1	4.63
A x B	1.62	3	.82
A x C	.81	1	.83
A x D	.70	1	.25
B x C	2.28	3	1.70
B x D	.55	3	.39
C x D	1.60	1	2.17
A x B x C	.17	3	.12
A x B x D	.63	3	.96
A x C x D	3.06	1	2.49
B x C x D	1.88	3	.90
A x B x C x D	.50	3	.88
Error	.92	273	

* $p < .05$

Table 21

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Effort Measured on the Likert Scale

Source	MS	df	F
Sex (A)	3.06	1	4.03*
Norm (B)	.54	3	1.18
nAch (C)	.30	1	.08
AWS (D)	1.32	1	.51
A x B	.23	3	.60
A x C	1.11	1	.64
A x D	.23	1	.52
B x C	2.79	3	2.53
B x D	.57	3	.39
C x D	.37	1	.28
A x B x C	.85	3	1.31
A x B x D	.45	3	1.16
A x C x D	.55	1	2.01
B x C x D	3.13	3	3.76
A x B x C x D	.88	3	.78
Error	1.20	273	

* $p < .05$

Table 22

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Task Measured on the Likert Scale

Source	MS	df	F
Sex (A)	2.60	1	1.89
Norm (B)	.38	3	.42
nAch (C)	.68	1	.32
AWS (D)	2.55	1	1.40
A x B	.19	3	.25
A x C	.59	1	1.30
A x D	.05	1	.08
B x C	1.34	3	.90
B x D	.20	3	.80
C x D	.89	1	3.11
A x B x C	.40	3	.26
A x B x D	1.42	3	.25
A x C x D	.14	1	.03
B x C x D	1.23	3	.65
A x B x C x D	.09	3	.26
Error	.99	273	

Table 23

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Luck Measured on the Likert Scale

Source	MS	df	F
Sex (A)	.67	1	.02
Norm (B)	.10	3	.08
nAch (C)	1.08	1	.64
AWS (D)	.14	1	.00
A x B	.52	3	.62
A x C	2.96	1	1.74
A x D	2.58	1	2.45
B x C	.35	3	.11
B x D	1.32	3	.88
C x D	.08	1	.07
A x B x C	1.96	3	2.06
A x B x D	.96	3	1.06
A x C x D	.03	1	.04
B x C x D	.14	3	.45
A x B x C x D	1.53	3	.93
Error	1.19	273	

Table 24

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Ability Measured on the Percentage Scale

Source	MS	df	F
Sex (A)	2.58	1	.11
Norm (B)	636.15	3	2.59
nAch (C)	2340.30	1	10.05*
AWS (D)	378.41	1	2.05
A x B	359.91	3	1.03
A x C	.10	1	.06
A x D	310.54	1	1.78
B x C	41.76	3	.14
B x D	435.64	3	2.31
C x D	25.95	1	.28
A x B x C	17.84	3	.05
A x B x D	283.27	3	1.97
A x C x D	151.19	1	.31
B x C x D	554.90	3	2.39
A x B x C x D	113.69	3	.61
Error	259.73	273	

* $p < .001$

Table 25

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Effort Measured on the Percentage Scale

Source	MS	df	F
Sex (A)	.84	1	.00
Norm (B)	183.03	3	.83
nAch (C)	282.77	1	1.28
AWS (D)	134.70	1	.61
A x B	151.44	3	.69
A x C	63.74	1	.29
A x D	8.27	1	.04
B x C	220.31	3	1.00
B x D	36.26	3	.16
C x D	11.75	1	.05
A x B x C	90.40	3	.41
A x B x D	36.57	3	.17
A x C x D	95.72	1	.43
B x C x D	54.28	3	.25
A x B x C x D	84.31	3	.38
Error	220.90	273	

Table 26

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Task Measured on the Percentage Scale

Source	MS	df	F
Sex (A)	154.00	1	.70
Norm (B)	493.36	3	1.20
nAch (C)	3815.71	1	1.30
AWS (D)	1454.31	1	1.63
A x B	21.08	3	.30
A x C	15.08	1	.01
A x D	608.92	1	.03
B x C	228.09	3	.39
B x D	1058.41	3	1.05
C x D	76.85	1	.06
A x B x C	66.13	3	.40
A x B x D	1046.64	3	2.25
A x C x D	18.55	1	.32
B x C x D	780.44	3	.57
A x B x C x D	281.76	3	.35
Error	449.75	273	

Table 27

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Luck Measured on the Percentage Scale

Source	MS	df	F
Sex (A)	250.25	1	1.55
Norm (B)	52.76	3	.49
nAch (C)	44.25	1	.42
AWS (D)	23.21	1	.14
A x B	85.80	3	.65
A x C	138.27	1	.98
A x D	23.02	1	.13
B x C	160.92	3	1.04
B x D	48.50	3	.33
C x D	114.27	1	.80
A x B x C	3.57	3	.04
A x B x D	166.27	3	1.08
A x C x D	2.10	1	.00
B x C x D	28.86	3	.27
A x B x C x D	61.67	3	.45
Error	142.23	273	

Table 28

Analysis of Variance Summary Table for the Factors of Sex, Norm, nAch and AWS for the Variable Predicted Score

Source	MS	df	F
Sex (A)	2.60	1	.27
Norm (B)	1.46	3	.60
nAch (C)	27.50	1	3.67
AWS (D)	.87	1	.01
A x B	3.64	3	1.47
A x C	37.89	1	7.22*
A x D	.67	1	.09
B x C	1.44	3	.18
B x D	.14	3	.16
C x D	46.61	1	9.07*
A x B x C	1.44	3	.36
A x B x D	4.49	3	.95
A x C x D	.61	1	.02
B x C x D	5.01	3	.49
A x B x C x D	2.18	3	.72
Error	4.73	273	

* $p < .01$

Table 29

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Likert Scale for the Factors of Norm, nAch and AWS for Men

Norm	AWS: Modern		AWS: Traditional	
	High nAch	Low nAch	High nAch	Low nAch
Male				
	n=5	n=2	n=9	n=15
Ability	2.96(.71)*	2.50(.71)	3.09(1.13)	3.67(.63)
Effort	3.32(.84)	4.00(0.00)	3.30(1.15)	3.58(.87)
Task**	3.84(1.06)	5.00(0.00)	3.33(1.03)	3.55(1.05)
Luck	1.84(.79)	3.20(1.70)	2.58(.99)	2.50(.94)
Female				
	n=6	n=5	n=14	n=6
Ability	3.62(.80)	3.72(1.23)	3.90(.63)	3.08(.49)
Effort	2.93(1.42)	3.12(.84)	3.54(.81)	2.62(.56)
Task	3.47(1.04)	4.00(.59)	3.52(.73)	4.25(.88)
Luck	2.18(.83)	2.90(1.52)	2.16(.91)	3.38(1.22)
Male-female				
	n=6	n=2	n=13	n=11
Ability	3.35(.75)	3.00(.00)	4.01(.89)	2.97(1.01)
Effort	3.57(.68)	2.75(.35)	3.35(1.18)	2.72(.87)
Task	3.50(.55)	3.85(.21)	3.67(1.24)	3.62(1.13)
Luck	2.18(.84)	2.70(.42)	2.28(1.08)	2.62(1.13)
Neutral				
	n=7	n=3	n=6	n=16
Ability	3.16(.77)	3.07(1.10)	4.03(.86)	3.65(.79)
Effort	3.16(1.24)	2.63(1.18)	3.00(1.25)	3.37(1.06)
Task	4.03(.80)	3.97(1.00)	4.07(.59)	3.63(.89)
Luck	2.03(1.11)	1.10(.17)	2.75(1.27)	2.71(1.07)

* Standard deviations are given in the parentheses.
** A high number means the task was judged to be easy.

Table 30

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Percentage Scale for the Factors of Norm, nAch, and AWS for Men

Norm	AWS: Modern		Traditional	
	High nAch	Low nAch	High nAch	Low nAch
Male				
	n=5	n=2	n=9	n=15
Ability	16.50(12.20)*	7.00(2.83)	26.11(9.61)	27.47(10.82)
Effort	27.20(17.82)	10.50(13.44)	27.00(12.39)	24.13(15.48)
Task	50.00(27.61)	70.00(28.28)	28.56(12.15)	36.23(17.88)
Luck	6.30(4.27)	12.50(17.68)	18.33(10.00)	12.07(7.64)
Female				
	n=6	n=5	n=14	n=6
Ability	32.67(20.75)	36.60(32.94)	36.25(14.17)	20.83(12.81)
Effort	21.17(16.86)	16.60(10.74)	23.39(9.69)	14.83(9.91)
Task	33.83(21.91)	28.60(19.36)	31.61(16.63)	54.17(15.63)
Luck	11.50(8.46)	18.20(29.35)	8.75(6.41)	10.17(8.13)
Male-Female				
	n=6	n=2	n=13	n=11
Ability	38.33(18.07)	25.00(00.00)	37.15(21.72)	25.45(11.50)
Effort	24.17(5.85)	20.00(7.00)	22.42(19.13)	19.09(12.21)
Task	27.50(19.43)	42.50(24.75)	31.54(29.75)	41.82(20.28)
Luck	10.00(3.16)	12.50(17.68)	8.88(12.86)	13.64(5.52)
Neutral				
	n=7	n=3	n=6	n=16
Ability	17.00(10.17)	19.33(14.01)	36.67(25.23)	26.38(17.21)
Effort	22.14(19.33)	19.00(26.89)	21.67(18.35)	27.00(16.31)
Task	53.29(30.42)	59.07(30.83)	30.83(18.00)	33.44(21.50)
Luck	7.57(6.92)	3.67(2.31)	10.83(9.70)	13.19(9.89)

*Standard deviations are given in parentheses

Table 31

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Likert Scale for the Factors of Norm nAch, and AWS for Women

	AWS			
Norm	Modern		Traditional	
	High nAch	Low nAch	High nAch	Low nAch
Male				
	n=16	n=13	n=7	n=8
Ability	3.49(1.11)*	3.00(.74)	3.16(.62)	4.30(.91)
Effort	2.73(1.26)	3.02(.95)	2.96(1.19)	3.59(1.23)
Task**	3.34(1.03)	3.98(.76)	3.83(.81)	3.48(1.28)
Luck	2.58(1.51)	2.25(1.14)	2.47(.94)	2.65(.68)
Female				
	n=17	n=13	n=8	n=7
Ability	3.55(1.05)	2.75(1.16)	3.38(1.30)	3.41(1.27)
Effort	2.89(1.07)	2.85(1.17)	3.49(1.78)	2.60(1.16)
Task	3.68(.94)	3.76(.92)	3.35(1.42)	3.84(1.20)
Luck	2.62(1.20)	2.41(1.11)	2.75(1.16)	2.33(1.11)
Male-female				
	n=15	n=14	n=6	n=10
Ability	3.50(1.00)	3.00(1.01)	3.25(.88)	3.27(.78)
Effort	3.39(.92)	2.57(1.39)	2.22(1.41)	3.18(1.33)
Task	3.81(.69)	3.42(1.18)	3.23(.57)	3.10(1.06)
Luck	2.63(1.07)	2.84(1.00)	2.22(1.04)	2.11(.83)
Neutral				
	n=14	n=17	n=6	n=8
Ability	3.05(1.19)	3.20(1.14)	3.27(.67)	3.20(1.14)
Effort	2.80(1.09)	3.01(1.13)	3.03(1.01)	3.29(1.01)
Task	3.52(1.13)	3.68(1.02)	3.62(1.05)	3.40(1.36)
Luck	2.54(1.12)	2.72(1.29)	2.62(1.08)	2.53(.74)

* Standard deviations are given in parentheses
** A high number means the task was judged to be easy

Table 32

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Percentage Scale for the Factors of Norm, nAch, and AWS for Women

Norm	AWS: Modern		AWS: Traditional	
	High nAch	Low nAch	High nAch	Low nAch
Male				
	n=16	n=13	n=7	n=8
Ability	36.56(19.50)*	20.38(8.03)	26.43(10.69)	30.63(10.16)
Effort	21.31(16.93)	21.15(12.93)	20.00(14.72)	21.75(12.37)
Task**	28.44(13.38)	48.00(23.60)	40.00(14.14)	39.38(23.37)
Luck	13.69(14.18)	10.46(10.81)	13.57(10.69)	8.25(5.75)
Female				
	n=17	n=13	n=8	n=7
Ability	32.65(13.71)	28.46(24.35)	30.63(20.26)	24.29(17.18)
Effort	22.35(13.36)	15.85(11.77)	24.38(16.13)	17.14(13.50)
Task	31.18(21.40)	38.08(21.17)	28.13(22.19)	42.86(25.63)
Luck	13.24(9.51)	16.08(18.24)	16.88(12.52)	15.71(21.68)
Male-female				
	n=15	n=14	n=6	n=10
Ability	29.40(15.96)	27.14(18.16)	35.33(8.75)	24.70(13.96)
Effort	26.47(13.71)	24.29(17.30)	24.50(12.23)	25.50(18.38)
Task	33.33(19.52)	38.93(21.50)	29.33(13.29)	37.80(22.84)
Luck	10.80(6.35)	13.57(10.99)	10.83(12.81)	12.00(9.82)
Neutral				
	n=14	n=17	n=6	n=8
Ability	22.32(12.19)	20.12(15.39)	30.00(13.78)	22.50(14.39)
Effort	18.32(15.16)	21.82(12.00)	25.00(23.24)	21.13(10.70)
Task	26.07(22.46)	44.41(21.06)	29.17(29.40)	43.75(16.64)
Luck	13.64(13.85)	14.24(16.88)	15.83(15.63)	12.63(8.25)

* Standard deviations are given in parentheses
** A high number means the task was judged to be easy

Table 33

Means and Standard Deviations for Predicted Score for the Factors of Sex, Norm, nAch and AWS

Norm	AWS: Modern		AWS: Traditional	
	High nAch	Low nAch	High nAch	Low nAch
Male				
Men	8.60 (1.14)* n=5	6.50 (2.12) n=2	9.11 (1.90) n=9	8.13 (1.96) n=15
Women	8.81 (2.20) n=16	7.54 (2.33) n=13	6.57 (1.99) n=7	9.00 (2.07) n=8
Female				
Men	9.17 (1.17) n=6	6.80 (2.28) n=5	8.14 (2.51) n=14	7.83 (1.33) n=6
Women	8.71 (1.65) n=17	7.62 (2.40) n=13	7.88 (1.73) n=8	9.71 (1.25) n=7
Male-female				
Men	10.17 (3.06) n=6	7.50 (.71) n=2	9.23 (2.55) n=13	7.91 (1.97) n=11
Women	8.13 (1.73) n=15	7.50 (2.93) n=14	8.33 (2.73) n=6	8.10 (2.42) n=10
Neutral				
Men	9.14 (1.95) n=7	7.33 (1.15) n=3	9.00 (3.52) n=6	8.44 (2.06) n=16
Women	8.64 (1.91) n=14	8.18 (1.63) n=17	8.33 (2.66) n=6	8.38 (2.97) n=8

*Standard deviations are given in parentheses

Table 34

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for Predicted Score, Ability, Effort, Task and Luck Judged on the Likert Scale and Ability, Effort, and Luck Judged on a Percentage Scale

Source	df	F
Viewpoint (A)	8,185	1.53
Sex (B)	8,185	.42
nAch (C)	8,185	1.00
AWS (D)	8,185	.75
A x B	8,185	.10
A x C	8,185	1.72
A x D	8,185	.62
B x C	8,185	.89
B x D	8,185	.39
C x D	8,185	.42
A x B x C	8,185	1.04
A x B x D	8,185	1.28
A x C x D	8,185	.95
B x C x D	8,185	.74
A x B x C x D	8,185	1.21

Note: Information on all the dependent variables was summarized in a matrix. No MS or SS information was given by the computer program.

The degrees of freedom are for the numerators and the denominator of the F ration.

Table 35

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Ability Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	2.93	1	1.69
Sex (B)	.00	1	.00
nAch (C)	1.38	1	.07
AWS (D)	4.22	1	3.72
A x B	.02	1	.03
A x C	1.29	1	.04
A x D	.06	1	.03
B x C	2.77	1	.61
B x D	.12	1	1.06
C x D	.46	1	.02
A x B x C	1.21	1	.50
A x B x D	.08	1	.00
A x C x D	1.58	1	2.10
B x C x D	.86	1	.15
A x B x C x D	.39	1	.05
Error	1.02	192	

Table 36

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Effort Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	.01	1	.39
Sex (B)	2.64	1	1.93
nAch (C)	.32	1	.15
AWS (D)	.45	1	.46
A x B	.28	1	.29
A x C	9.73	1	2.45
A x D	4.09	1	2.72
B x C	.22	1	.11
B x D	.08	1	.00
C x D	.50	1	.92
A x B x C	.06	1	.17
A x B x D	.31	1	3.15
A x C x D	.96	1	1.54
B x C x D	.07	1	.33
A x B x C x D	.81	1	1.14
Error	1.07	192	

Table 37

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Task Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	.38	1	2.32
Sex (B)	.10	1	.00
nAch (C)	.01	1	2.30
AWS (D)	.46	1	.81
A x B	.30	1	.18
A x C	.15	1	.16
A x D	.61	1	.47
B x C	2.20	1	1.55
B x D	.04	1	.05
C x D	1.54	1	.49
A x B x C	4.28	1	2.62
A x B x D	2.05	1	.04
A x C x D	.35	1	1.60
B x C x D	3.87	1	.75
A x B x C x D	.67	1	3.14
Error	1.09	192	

Table 38

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Luck Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	3.21	1	1.29
Sex (B)	.02	1	.08
nAch (C)	.05	1	.02
AWS (D)	.31	1	.67
A x B	.23	1	.08
A x C	1.51	1	.33
A x D	.02	1	.00
B x C	.14	1	.50
B x D	.42	1	1.22
C x D	.02	1	.00
A x B x C	.00	1	.82
A x B x D	.22	1	2.02
A x C x D	.69	1	.11
B x C x D	.50	1	.00
A x B x C x D	.46	1	2.98
Error	1.14	192	

Table 39

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Ability Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	475.75	1	2.58
Sex (B)	81.78	1	.38
nAch (C)	1324.72	1	5.01*
AWS (D)	92.03	1	.30
A x B	12.28	1	.07
A x C	53.67	1	.16
A x D	51.33	1	.06
B x C	904.43	1	2.89
B x D	140.98	1	.30
C x D	420.55	1	1.79
A x B x C	138.15	1	.09
A x B x D	254.83	1	1.79
A x C x D	99.06	1	.62
B x C x D	525.71	1	2.96
A x B x C x D	1.78	1	.06
Error	279.19	192	

* $p < .05$

Table 40

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Effort Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	99.21	1	.54
Sex (B)	106.16	1	.57
nAch (C)	29.50	1	.16
AWS (D)	5.25	1	.03
A x B	3.14	1	.02
A x C	1583.97	1	8.57
A x D	203.84	1	1.10
B x C	17.17	1	.09
B x D	47.59	1	.25
C x D	4.39	1	.02
A x B x C	173.88	1	.94
A x B x D	439.53	1	2.38
A x C x D	1.49	1	.01
B x C x D	22.36	1	.12
A x B x C x D	.03	1	.00
Error	184.91	192	

* p (.005

Table 41

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Task Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	916.97	1	2.01
Sex (B)	105.50	1	.23
nAch (C)	1522.27	1	3.45
AWS (D)	198.36	1	.44
A x B	169.51	1	.37
A x C	73.87	1	.16
A x D	375.37	1	.82
B x C	2.31	1	.01
B x D	979.95	1	2.14
C x D	3.46	1	.01
A x B x C	2376.20	1	5.21*
A x B x D	311.83	1	.68
A x C x D	597.60	1	1.31
B x C x D	133.53	1	.29
A x B x C x D	1269.23	1	2.78
Error	459.91	192	

* $p < .05$

Table 42

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Luck Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	290.89	1	2.28
Sex (B)	51.95	1	.44
nAch (C)	2.30	1	.03
AWS (D)	8.55	1	.07
A x B	13.72	1	.11
A x C	234.64	1	2.21
A x D	11.31	1	.04
B x C	26.38	1	.17
B x D	39.77	1	.25
C x D	19.07	1	.15
A x B x C	253.99	1	1.66
A x B x D	158.45	1	.90
A x C x D	81.30	1	.58
B x C x D	204.33	1	1.43
A x B x C x D	263.90	1	1.93
Error	135.83	192	

Table 43

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, Norm and AWS for the Variable Predicted Score

Source	MS	df	F
Viewpoint (A)	3.43	1	1.02
Sex (B)	.57	1	.01
nAch (C)	.05	1	.27
AWS (D)	.12	1	.00
A x B	.19	1	.06
A x C	.38	1	.04
A x D	.61	1	.63
B x C	1.36	1	1.19
B x D	.07	1	.01
C x D	.00	1	.01
A x B x C	2.93	1	1.48
A x B x D	.25	1	.00
A x C x D	2.35	1	1.02
B x C x D	1.97	1	.24
A x B x C x D	2.03	1	.36
Error	4.35	192	

Table 44

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Likert Scale for the Factors of Viewpoint, Sex, Norm and AWS for Men

Norm	AWS: Modern	AWS: Traditional
	Actor	
Male	n=7	n=24
Ability	2.38(.69)*	3.45(.83)
Effort	3.51(.76)	3.48(.94)
Task**	4.17(1.04)	3.47(1.03)
Luck	2.23(1.16)	2.53(.94)
Female	n=11	n=20
Ability	3.66(.96)	3.66(.70)
Effort	3.02(1.14)	3.27(.85)
Task	3.71(.87)	3.74(.83)
Luck	2.51(1.18)	2.53(1.14)
	Observer	
Male	n=7	n=7
Ability	2.73(.79)	3.02(.54)
Effort	2.80(.84)	2.90(1.52)
Task**	4.10(.72)	3.74(1.11)
Luck	2.11(.73)	2.51(.86)
Female	n=4	n=10
Ability	3.40(.49)	3.45(1.39)
Effort	4.13(1.03)	3.21(.87)
Task	2.25(1.48)	3.58(.86)
Luck	2.05(1.74)	2.25(.81)

* Standard Deviations are given in the parentheses

** A high number means the task was seen as easy

Table 45

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Percentage Scale for the Factors of Viewpoint, Sex, Norm and AWS for Men

Norm	AWS: Modern	AWS: Traditional
	Actor	
Male	n=7	n=24
Ability	13.79(11.04)*	26.96(10.19)
Effort	22.43(17.56)	25.21(14.86)
Task**	55.71(27.15)	33.42(16.14)
Luck	8.07(8.57)	14.42(8.94)
Female	n=11	n=20
Ability	25.57(34.45)	31.63(15.27)
Effort	19.09(13.92)	20.83(10.31)
Task	31.45(19.94)	38.38(19.13)
Luck	14.55(19.81)	9.18(6.78)
	Observer	
Male	n=7	n=7
Ability	16.57(10.55)	23.86(15.12)
Effort	22.86(9.06)	12.86(7.24)
Task**	45.00(20.82)	57.14(22.89)
Luck	14.14(10.84)	6.14(2.91)
Female	n=4	n=10
Ability	32.50(14.43)	29.50(24.54)
Effort	36.75(13.00)	26.40(15.87)
Task	20.00(15.81)	35.60(25.50)
Luck	10.75(6.90)	8.70(5.74)

* Standard deviations are given in parentheses

** A high number means the task was seen as easy

Table 46

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Likert Scale for the Factors of Viewpoint, Sex, Norm and AWS for Women

Norm	AWS: Modern	AWS: Traditional
	Actor	
Male	n=29	n=15
Ability	3.26(.98)*	3.77(.96)
Effort	2.86(1.12)	3.29(1.21)
Task**	3.62(.96)	3.64(1.06)
Luck	2.43(1.34)	2.57(.79)
Female	n=30	n=15
Ability	3.20(1.16)	3.39(1.24)
Effort	2.87(1.09)	3.07(1.22)
Task	3.71(.91)	3.58(1.30)
Luck	2.53(1.15)	2.55(1.12)
	Observer	
Male	n=12	n=6
Ability	2.95(1.23)	2.92(.80)
Effort	2.85(.72)	2.50(.78)
Task**	3.42(1.47)	3.32(1.48)
Luck	2.53(1.06)	2.03(.85)
Female	n=7	n=4
Ability	3.03(1.32)	3.93(.15)
Effort	3.90(.91)	3.23(.29)
Task	4.04(1.80)	3.68(.87)
Luck	1.77(1.22)	2.15(.70)

* Standard deviations are given in parentheses

** A high number means the task was seen as easy

Table 47

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Percentage Scale for the Factors of Viewpoint, Sex, Norm and AWS for Women

Norm		AWS: Modern	AWS: Traditional
		Actor	
Male		n=29	n=15
	Ability	29.31(17.25)*	28.67(10.26)
	Effort	21.24(15.01)	20.93(13.05)
	Task**	37.21(20.80)	39.67(18.94)
	Luck	17.24(18.80)	10.73(16.74)
Female		n=30	n=15
	Ability	30.83(18.80)	27.67(18.50)
	Effort	19.53(12.90)	21.00(14.90)
	Task	34.17(21.22)	35.00(24.20)
	Luck	14.47(12.87)	16.33(8.55)
		Observer	
Male		n=12	n=6
	Ability	21.67(13.73)	25.00(13.78)
	Effort	19.17(10.19)	20.00(16.43)
	Task**	21.67(13.73)	40.00(22.80)
	Luck	12.50(9.60)	15.00(17.89)
Female		n=7	n=4
	Ability	25.43(19.53)	33.75(20.56)
	Effort	25.71(16.44)	29.25(15.77)
	Task	25.43(19.53)	30.00(13.54)
	Luck	5.29(6.21)	7.00(3.56)

* Standard deviations are given in parentheses

** A high number means the task was seen as easy

Table 48

Means and Standard Deviations for Predicted Score for the Factors of Viewpoint, Sex, Norm and AWS

nAch		AWS: Modern	AWS: Traditional
		Actor	
High			
	Men	8.00(1.63)* n=7	8.50(1.96) n=24
	Women	8.24(2.31) n=29	7.87(2.33) n=15
Low			
	Men	8.09(2.07) n=11	8.05(2.19) n=4
	Women	8.23(2.05) n=30	8.73(1.75) n=15
		Observer	
High			
	Men	8.43(1.72) n=7	8.43(1.72) n=7
	Women	8.67(2.15) n=12	9.00(1.79) n=6
Low			
	Men	8.75(1.89) n=4	8.20(2.62) n=10
	Women	8.71(2.06) n=7	8.00(1.63) n=4

*Standard deviations are given in parentheses

Table 49

Analysis of Variance Summary Table for the Factors of Viewpoint, Sex, nAch and AWS for Predicted Score, Ability, Effort, Task and Luck Judged on the Likert Scale and Ability, Effort, and Task Measured on a Percentage Scale

	df	F
Viewpoint (A)	8,185	1.87
Sex (B)	8,185	.46
nAch (C)	8,185	2.07*
AWS (D)	8,185	.75
A x B	8,185	.070
A x C	8,185	1.223
A x D	8,185	.914
B x C	8,185	1.00
B x D	8,185	.322
C x D	8,185	3.51**
A x B x C	8,185	3.23**
A x B x D	8,185	1.25
A x C x D	8,185	1.191
B x C x D	8,185	.942
A x B x C x D	8,185	.541

Note: Information on all the dependent variables was summarized in a matrix. No Ms or SS information was given by the computer program.

The degrees of freedom for the numerator and the denominator of the F ratio.

* $p < .05$
** $p < .005$

Table 50

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Ability Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	3.21	1	1.57
Sex (B)	.04	1	.04
nAch (C)	.04	1	2.67
AWS (D)	3.94	1	3.24
A x B	.03	1	.04
A x C	5.04	1	4.45*
A x D	.40	1	1.13
B x C	1.05	1	.25
B x D	.00	1	.35
C x D	1.03	1	3.41
A x B x C	1.01	1	.01
A x B x D	.39	1	.25
A x C x D	4.19		2.68
B x C x D	2.19	1	.88
A x B x C x D	1.64	1	.78
Error	.95	192	

* $p < .05$

Table 51

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Luck Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	3.22	1	3.42
Sex (B)	.02	1	.00
nAch (C)	.06	1	.25
AWS (D)	.27	1	.24
A x B	.03	1	.02
A x C	.86	1	.89
A x D	.01	1	.00
B x C	.94	1	1.11
B x D	.10	1	.10
C x D	.15	1	.23
A x B x C	10.11	1	9.75*
A x B x D	1.94		2.54
A x C x D	.04	1	.17
B x C x D	1.08	1	1.27
A x B x C x D	.01	1	.00
Error	1.09		

Table 51

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Luck Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	3.22	1	3.42
Sex (B)	.02	1	.00
nAch (C)	.06	1	.25
AWS (D)	.27	1	.24
A x B	.03	1	.02
A x C	.86	1	.89
A x D	.01	1	.00
B x C	.94	1	1.11
B x D	.10	1	.10
C x D	.15	1	.23
A x B x C	10.11	1	9.75*
A x B x D	1.94	1	2.54
A x C x D	.04	1	.17
B x C x D	1.08	1	1.27
A x B x C x D	.01	1	.00
Error	1.09	192	

* $p < .01$

Table 52

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Effort Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	.02	1	.54
Sex (B)	2.78	1	2.24
nAch (C)	.16	1	2.82
AWS (D)	.35	1	.16
A x B	.03	1	.14
A x C	.91	1	.16
A x D	3.94	1	2.73
B x C	.02	1	.27
B x D	.01	1	.00
C x D	.41	1	.94
A x B x C	.34	1	.59
A x B x D	.68	1	3.88
A x C x D	.37	1	2.25
B x C x D	.54	1	.03
A x B x C x D	3.01	1	1.08
Error	1.10	192	

Table 53

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Task Measured on the Likert Scale

Source	MS	df	F
Viewpoint (A)	.47	1	2.77
Sex (B)	.19	1	.00
nAch (C)	2.50	1	.15
AWS (D)	.82	1	.96
A x B	.34	1	.18
A x C	2.03	1	1.46
A x D	.70	1	1.43
B x C	3.25	1	1.52
B x D	.30	1	.25
C x D	1.22	1	4.32
A x B x C	1.94	1	.24
A x B x D	.05	1	.26
A x C x D	.00	1	.18
B x C x D	.10	1	.47
A x B x C x D	.14	1	.06
Error	1.11	192	

Table 54

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Ability Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	520.84	1	2.67
Sex (B)	101.62	1	.34
nAch (C)	972.80	1	4.25*
AWS (D)	187.80	1	.97
A x B	2.47	1	.02
A x C	193.30	1	.65
A x D	209.47	1	.67
B x C	261.68	1	.88
B x D	146.37	1	.64
C x D	75.49	1	.33
A x B x C	1590.61	1	8.75**
A x B x D	13.12	1	.10
A x C x D	550.51	1	2.36
B x C x D	638.38	1	2.54
A x B x C x D	59.15	1	.40
Error	264.79	192	

* $p < .05$

** $p < .005$

Table 55

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Effort Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	109.79	1	.59
Sex (B)	79.62	1	.43
nAch (C)	464.62	1	2.48
AWS (D)	29.41	1	.16
A x B	9.30	1	.05
A x C	175.12	1	.94
A x D	166.23	1	.89
B x C	150.92	1	.81
B x D	1.65	1	.01
C x D	13.14	1	.07
A x B x C	1.69	1	.01
A x B x D	314.08	1	1.68
A x C x D	195.41	1	1.04
B x C x D	356.84	1	1.91
A x B x C x D	340.15	1	1.82
Error	187.14	1.92	

Table 56

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Task Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	893.91	1	1.33
Sex (B)	67.41	1	.54
nAch (C)	3029.33	1	.32
AWS (D)	182.71	1	.20
A x B	67.12	1	.09
A x C	638.78	1	.57
A x D	3.68	1	.11
B x C	809.55	1	.67
B x D	5.48	1	.90
C x D	165,42	1	.17
A x B x C	3572.11	1	.60
A x B x D	320.28	1	1.15
A x C x D	467.61	1	.83
B x C x D	152.96	1	.18
A x B x C x D	729.18	1	.06
Error	453.04	192	

Table 57

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Luck Measured on the Percentage Scale

Source	MS	df	F
Viewpoint (A)	285.15	1	2.28
Sex (B)	55.02	1	.37
nAch (C)	6.13	1	.00
AWS (D)	6.17	1	.05
A x B	4.23	1	.02
A x C	.72	1	.02
A x D	11.95	1	.09
B x C	3.53	1	.06
B x D	69.90	1	.49
C x D	66.65	1	.56
A x B x C	433.11	1	3.23
A x B x D	5.59	1	.00
A x C x D	227.62	1	1.97
B x C x D	56.43	1	.54
A x B x C x D	.61	1	.00
Error	139.08	192	

Table 58

Analysis of Variance Table for the Factors of Viewpoint, Sex, nAch and AWS for the Variable Predicted Score

Source	MS	df	F
Viewpoint (A)	4.12	1	1.81
Sex (B)	1.14	1	.06
nAch (C)	17.95	1	3.42
AWS (D)	.95	1	.10
A x B	1.10	1	.03
A x C	1.83	1	1.04
A x D	.26	1	.48
B x C	12.53	1	2.43
B x D	1.76	1	.34
C x D	65.98	1	17.63**
A x B x C	17.12	1	5.19*
A x B x D	1.10	1	.21
A x C x D	.56	1	.03
B x C x D	4.01	1	.30
A x B x C x D	.54	1	.20
Error	3.83	192	

* $p < .05$

** $p < .001$

Table 59

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Likert Scale for the Factors of Viewpoint, Sex, nAch and AWS for Men

nAch		AWS: Modern	AWS: Traditional
		Actor	
High		n=11	n=23
	Ability	3.32(.80)*	3.59(.93)
	Effort	3.11(1.15)	3.45(.94)
	Task	3.66(1.02)	3.45(.84)
	Luck	2.03(.79)	2.33(.94)
Low		n=7	n=21
	Ability	3.37(1.20)	3.50(.65)
	Effort	3.37(.81)	3.30(.90)
	Task	4.29(.68)	3.75(1.04)
	Luck	2.99(1.43)	2.75(1.08)
		Observer	
High		n=8	n=7
	Ability	2.88(.81)	3.47(1.12)
	Effort	3.46(1.19)	2.73(1.09)
	Task	3.18(1.46)	3.49(1.03)
	Luck	2.26(.69)	2.91(.62)
Low		n=3	n=10
	Ability	3.23(.59)	3.13(1.15)
	Effort	2.80(.72)	3.33(1.18)
	Task	4.07(1.01)	3.76(.91)
	Luck	1.63(.55)	1.96(.72)

* Standard deviations are given in the parentheses

** A high number means the task was judged to be easy

Table 60

Means and Standard Deviations for Ability, Effort, Task and Luck Measured on the Percentage Scale for the Factors of Viewpoint, Sex, nAch and AWS for Men

nAch		AWS: Modern	AWS: Traditional
		Actor	
High		n=11	n=23
	Ability	25.32(18.60)	32.28(13.33)
	Effort	23.91(16.71)	24.80(10.70)
	Task	41.18(24.83)	30.41(14.61)
	Luck	9.14(7.10)	12.50(9.14)
Low		n=7	n=21
	Ability	28.14(30.55)	25.57(11.50)
	Effort	14.86(10.76)	21.48(14.52)
	Task	40.43(28.13)	41.43(18.78)
	Luck	16.57(25.18)	11.52(7.63)
		Observer	
High		n=8	n=7
	Ability	23.25(15.65)	41.43(23.58)
	Effort	30.25(12.61)	20.71(10.58)
	Task	31.63(20.26)	28.29(18.99)
	Luck	14.63(10.06)	9.57(5.59)
Low		n=3	n=10
	Ability	20.00(10.00)	17.20(11.40)
	Effort	21.67(10.41)	20.90(17.21)
	Task	50.00(25.00)	55.80(25.01)
	Luck	8.33(5.77)	6.30(3.97)

* Standard deviations are given in the parentheses

** A high number means the task was judged to be easy

Table 61

Means and Standard Deviations for Ability, Effort, Task and Luck on the Likert Scale for the Factors of Viewpoint, Sex, nAch and AWS for Women

nAch		AWS: Modern	AWS: Traditional
		Actor	
High		n=33	n=15
	Ability	3.52(1.06)	3.27(1.01)
	Effort	2.82(1.15)	3.24(1.17)
	Task	3.51(.98)	3.57(1.16)
	Luck	2.60(1.34)	2.62(1.04)
Low		n=26	n=15
	Ability	2.87(.97)	3.89(1.15)
	Effort	2.93(1.04)	3.13(1.26)
	Task	3.87(.83)	3.65(1.21)
	Luck	2.33(1.11)	2.50(.89)
		Observer	
High		n=12	n=2
	Ability	2.41(1.08)	3.00(.00)
	Effort	2.94(.91)	3.00(.00)
	Task	3.89(1.37)	4.00(1.41)
	Luck	2.07(.96)	1.50(.71)
Low		n=7	n=8
	Ability	3.96(.77)	3.40(.88)
	Effort	3.74(.78)	2.74(.80)
	Task	3.23(1.40)	3.33(1.20)
	Luck	2.56(1.13)	2.23(.81)

* Standard deviations are given in the parentheses

** A high number means the task was judged to be easy

Table 62

Means and Standard Deviations for Ability, Effort, Task and Luck on the Percentage Scale for the Factors of Viewpoint, Sex, nAch and AWS for Women

nAch		AWS: Modern	AWS: Traditional
		Actor	
High		n=33	n=15
	Ability	34.55(16.60)	28.67(16.09)
	Effort	21.85(14.96)	22.33(15.10)
	Task	29.85(17.74)	33.67(19.22)
	Luck	13.68(12.17)	15.38(10.70)
Low		n=26	n=15
	Ability	24.42(18.24)	27.67(13.74)
	Effort	18.50(12.41)	19.60(12.66)
	Task	43.04(22.54)	41.00(23.62)
	Luck	13.04(14.43)	12.12(15.27)
		Observer	
High		n=12	n=2
	Ability	16.50(11.70)	25.00(7.07)
	Effort	18.33(13.03)	35.00(21.21)
	Task	55.92(28.61)	28.90(23.21)
	Luck	9.25(9.83)	11.06(10.11)
Low		n=7	n=8
	Ability	34.29(15.92)	29.38(18.21)
	Effort	27.14(11.13)	20.88(14.80)
	Task	27.71(26.23)	36.25(20.49)
	Luck	10.86(8.17)	13.11(14.30)

* Standard deviations are given in the parentheses

** A high number means the task was judged to be easy

Table 63

Means and Standard Deviations for Predicted Score for the Factors of Viewpoint, Sex, nAch and AWS

nAch		AWS Modern	AWS Traditional
High			
	Men	8.90(1.14) n=11	8.52(2.29) n=23
	Women	8.76(1.90) n=33	7.27(1.91) n=15
Low			
	Men	6.71(2.06) n=7	8.05(1.77) n=21
	Women	7.58(2.32) n=26	9.33(1.72) n=15
		Observer	
High			
	Men	8.88(1.55) n=8	8.00(1.63) n=7
	Women	9.67(1.50) n=12	9.00(2.83) n=2
Low			
	Men	7.66(2.08) n=3	8.50(2.64) n=10
	Women	7.00(1.83) n=7	8.50(1.60) n=8

*Standard deviations are given in the parentheses

APPROVAL SHEET

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.
The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

April 18, 1980
Date

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